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REPORT

OF THE

SECRETARY OF THE NAVY;

BEING PART OF

THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE FIRST SESSION OF THE FIFTY-FOURTH CONGRESS.

WASHINGTON:
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REPORT

OF THE

SECRETARY OF THE NAVY.

WASHINGTON, D. C., *November 27, 1895.*

To the PRESIDENT:

The following vessels, built by contract, have been completed, accepted, and commissioned since the date of my last report:

Vessel.	Date of speed trial.	Speed attained.	Horse-power.
Olympia	Dec. 15, 1893	21.69 knots	17,313
Minneapolis	July 14, 1894	23.073 knots	20,493
Indiana	Oct. 18, 1895	15.546 knots	9,545

The ram *Katahdin*, completed under contract at the Bath Iron Works, was tried over a designated course upon Long Island Sound on November 31 of the present year, making an average of 16.011 knots an hour. The contract requirements, excepting, perhaps, some slight finishing touches, had all been complied with, save only that a speed of 17 knots was not reached upon the trial, and for this reason the Department has not accepted the ship. In the contract the company guarantees this speed. There is no provision authorizing the acceptance of the ship if she fails to attain 17 knots. The company earnestly insists that as the vessel and its machinery were constructed upon the Department's plans and specifications, that as these plans and specifications were faithfully followed and the work well done, the ship should be accepted.

The following vessels have been completed at navy-yards and put in commission:

Maine, at navy-yard, New York.

Texas, at navy-yard, Norfolk, Va.

Amphitrite, at navy-yard, Norfolk, Va.

Progress in the construction of such armored vessels as were being constructed in Government yards has been slow. It was explained in

the annual reports submitted in 1893 and 1894 that the delays in this regard were due in large part to the seemingly unavoidable failure of contractors to supply armor according to contract. The difficulties, however, that lay in the way of the manufacture of armor have been all overcome, and it remains to be stated that the system long prevailing in our Government yards is partly responsible for the slow progress that has been made.

Constructors in charge of these establishments, impressed with the necessity as well as the difficulty of keeping together an efficient force of skilled workmen, have been, until the practice was changed by positive order, following the traditional custom of using for urgent repairs the force employed upon vessels in course of construction, thus taking workmen off and putting them back on these ships as the exigencies of this system required. The Department, some time since, peremptorily ordered that a full force should be kept always at work upon each vessel building, and the reasonable expectation now is that the *Terror* will be in commission about February 1, 1896; the *Monadnock* about the same date, and the *Puritan*, the remaining ship of this class, by July 1, 1896.

The Department is pushing vigorously the work upon all ships now building; and in this connection it may be stated that, whether operative or not, the same reasons which have tended to delay the progress of vessels building in Government yards exist in the establishments of contractors. As it is in the interest of economy and the orderly conduct of business to keep in employment an average number of workmen, and as there are so many objections to turning off employees and hiring again when small jobs come in contractors are naturally tempted to delay or expedite the con pletion of large contracts as may suit the convenience of their business. To provide against delays arising from causes of this character, the Department has from the beginning of the construction of our new Navy inserted in all its contracts for new ships a clause imposing penalties for delays, coupled always with a provision authorizing the Secretary of the Navy, for good cause shown, to extend the time provided in the contract for completion.

The records of the Department will show that in numerous cases this power of extension has been exercised, and it is believed that few, if any, cases can be found in which a Secretary has refused to extend the time allowed a contractor when a delay was the result of causes beyond his control. Congress has, however, in many instances, relieved contractors from penalties for delay imposed upon them by the Department after a careful hearing, and this although in some cases these very contractors have earned and been paid large premiums. It is not my purpose to contend that Congress may not very properly, in the exercise of its large discretion, relieve when the Navy Department has failed to do so.

In some cases the rigid rules by which an Executive Department is bound may operate to disenable it from doing complete justice, but it is deemed not improper in this manner to call to the attention of the legislative branch of the Government the results that are likely to follow from listening too readily to ex parte statements made by contractors, upon whose claims for relief the Department has already passed, after affording the fullest opportunity of being heard. The best results can be expected to follow from contracts only when contractors fully understand that both Congress and the Executive Departments of the Government stand ready at all times to give them promptly every dollar they earn, and to impose upon them at the same time every penalty to which they may become subject under their obligations.

In this connection the Department is pleased to be able to testify its high appreciation of the superior excellence of the workmanship done generally by the establishments that have built the ships constituting our new Navy. Disinterested and competent critics unite in saying that in thoroughness and finish of work the ships of our new Navy are unexcelled, and, indeed, seldom equaled in the world. This result is largely due to the ingenuity and fidelity of the American mechanic, actuated by a laudable desire to entitle himself fairly to the large wages he earns, and it is contributed to in no small degree by the rigid inspection of material and workmanship by trained and skilled officers, who, as they are to man these ships, have every possible motive to the strictest performance of duty.

The high standards of excellence, both in material and workmanship, determined upon when the foundations of our new Navy were being laid were then thought by many contractors to be too rigorous and exacting; but the Department has at all times upheld and even raised these standards as occasion offered, and now it is gratifying to state that the time has come when our shipbuilders not only live up to all the requirements that have been made, but acquiesce to the fullest extent in the wisdom of a system by which they have been enabled to put themselves in the very front rank of naval constructors.

Contracts for the three torpedo boats authorized by the act of July 26, 1894, were awarded to the Columbian Iron Works and Dry Dock Company, of Baltimore, Md., on May 3, 1895. These vessels are of the general type of the *Ericsson*, with slightly greater displacements, and they are required to attain on their acceptance trials a speed of not less than 24½ knots. The date fixed in the contract for their completion is August 2, 1896.

No speed premiums have been provided for in the contracts for these vessels. In my last annual report it was stated that no speed premiums would be offered on the torpedo boats then about to be contracted for, and further that in the opinion of the Department the time had arrived when the system of premiums could with profit be abandoned. It is gratifying to be able to state that Congress took this view and enacted it into law.

Contracts for the construction of the three torpedo boats authorized by the last naval appropriation act have been awarded as follows, viz: Nos. 6 and 7 to the Herreshoff Manufacturing Company, of Bristol, R. I., and No. 8 to Moran Bros., of Seattle, Wash. The contracts for these vessels require that they shall develop upon trial, No. 8 an average speed of 26 knots, and Nos. 6 and 7 an average speed of 27½ knots per hour, maintained for two hours, and that they shall each be completed within fifteen months from the respective dates of contracts. Torpedo boats Nos. 6 and 7 are to be built according to the contractors' plans and specifications, and No. 8 in accordance with those furnished by the Department.

Proposals for the construction of gunboats Nos. 10 to 15, inclusive, authorized in the last naval appropriation act, were opened October 1.

Contracts for their construction have been awarded as follows:

Gunboat No. 10 to Lewis Nixon, of Elizabeth, N. J.; gunboats Nos. 11 and 12 to the Bath Iron Works, of Bath, Me.; gunboat No. 13 to John H. Dialogue and John H. Dialogue, jr., of Camden, N. J.; and gunboats Nos. 14 and 15 to the Union Iron Works, San Francisco, Cal. Gunboats 11, 12, 14, and 15 are to be built in accordance with the Department's plans and specifications, and Nos. 10 and 13 in accordance with the contractor's plans and specifications. The contracts for the construction of these vessels provide that they shall each maintain a speed of not less than 12 knots per hour for two consecutive hours, and that they shall severally be completed within fifteen months from the dates thereof. These boats are of the type known as light-draft composite gunboats, of 1,000 tons displacement each. Four of them (Nos. 10, 11, 12, and 13) are to have single-screw engines and full sail power; the remaining two (Nos. 14 and 15) are to be provided with twin-screw engines and steadying sails only.

The Department considered with much care the many conflicting opinions and arguments presented as to whether these vessels should be constructed with full sail and only auxiliary steam power, or with steam as the motive power and sails only for steadying, and finally decided to construct four of them with full sail power, and two with full steam power. Vessels of this class can not have speed endurance and offensive power at the same time. They are not formidable as commerce-destroyers or as combatants, but by reason of their ability to keep at sea or remain in port for long periods without being inconvenienced by lack of fuel, and for the purpose of carrying our flag and our sailors to the ports of those countries in which our commerce most frequently needs protection, ships of this class are of great value,

Advertisements for the construction of the two seagoing coast line battle ships authorized by the last naval appropriation act have been issued, and bids will be opened November 30.

VESSELS IN COURSE OF CONSTRUCTION.

A reference to the report of the chief constructor will show that work on the vessels now in course of construction has advanced quite satisfactorily during the past year.

Work on the first-class battle ship *Iowa* is progressing satisfactorily. A large part of her armor has been delivered, and it is probable that she will be completed about October, 1897.

The structural work of the hull of the first-class battle ship *Massachusetts* is practically completed except as regards the armor. A number of items of work in connection with fittings remain to be done. It is estimated that the vessel can be completed in about eight weeks after the completion of the delivery of her armor.

The first-class battle ship *Oregon* is as far advanced as is practicable before the delivery of armor and gun mounts. About six months after receipt of armor and armament will be required for their installation, and all other hull work can be finished within that time.

The *Brooklyn* was launched early in October. It is probable that at the current rate of progress this ship will not be ready for trial in less than one year, but if it should be necessary to push her construction with special dispatch she could, by the modification of the existing plans for turning her turrets, etc., be made ready for trial at a much earlier period.

The work on gunboats Nos. 7, 8, and 9 (*Nashville*, *Wilmington*, and *Helena*) is progressing satisfactorily. The hulls of these vessels are about completed. The two former ships were successfully launched on the 19th of October. The date of launching the latter has not yet been determined. She is almost as far advanced as Nos. 7 and 8, but the contractor having ample space for all work in hand has determined not to put her in water as yet, for the reason that work can be prosecuted to better advantage with the vessel on the stocks.

The work on the tugboat *Unadilla* (No. 4) at the Mare Island Navy-Yard has progressed rapidly. The keel was laid April 29, 1895, she was launched September 21, 1895, and is now practically finished.

Contracts have been made for materials for the hull of tugboat No. 5, to be built at the Norfolk Navy-Yard for the navy-yard at League Island, Pa. Work on this tug is being expedited, and it is believed she will be completed by August 1, 1896.

Work on torpedo boats Nos. 3, 4, and 5 has been begun by the contractor, the Columbian Iron Works and Dry Dock Company. Some delay was caused by an unexpected difficulty encountered in placing contracts for steel; nevertheless the contractor hopes to have the boats completed on time, August 3, 1896.

WOODWORK IN VESSELS.

In my last report I called attention to the disadvantages of woodwork in war vessels, and the consequent danger from fire, and it was

stated that I had directed the suspension, in ships then building, of all woodwork not absolutely necessary. The result of the investigation then going on was that woodwork in the interior of ships was, as far as practicable, dispensed with. No substitute for wood in all essentials has as yet been found and for some purposes it is still deemed indispensable. I therefore recently ordered an investigation of the new process for fire-proofing wood in use by the Electric Fireproofing Company. The reports made of these investigations led the Department to the conclusion that it was desirable to treat by this process such wood as must be used in the interior of our new ships, and on July 23, 1895, having first agreed with this company upon a reasonable price, it was ordered that hereafter, as far as possible, all wood so used should be first treated by this process.

REFITTING THE CHICAGO.

An item of $300,000 is asked for in the estimates for the appropriation "construction and repair" for refitting the *Chicago*. This vessel was one of the first cruisers built for the new Navy and has done good service for over eight years. During this time great progress has been made in the development of rapid-firing guns and propelling machinery. New boilers and engines are now necessary and are being constructed for the *Chicago*, and these are expected, although weighing less and occupying less space than the original machinery, to develope sufficient power to increase her speed 3 knots per hour. The coal capacity of the ship will also be considerably increased.

THE HARTFORD.

Preliminary designs have been prepared in the Bureau of Steam Engineering for new compound engines for the *Hartford*, and an appropriation of $100,000 is asked with which to commence their construction.

While this change is being made it is proposed to replace the battery of old-type 6-inch guns with 5-inch rapid-firing guns. The rig is to be changed to that of a three-masted schooner with pole masts. The deck planking, from long usage, has become badly worn and must be relaid. It is also proposed to thoroughly overhaul and repair the general fittings of the ship.

THE ATLANTA.

The machinery of the *Atlanta* has been worn out in service, and it is necessary to replace it with new. It is proposed to install part of the boiler power in the form of water-tube boilers, thus securing increased power with a large reduction in weight. The Department has been giving especial attention to water-tube boilers, and has directed that they be used in some of the gunboats recently let out to contract.

NAVAL CONSTRUCTORS.

The Navy Department years ago adopted the wise policy of selecting its future naval constructors from among the best and brightest graduates of the Naval Academy and sending them abroad for a post-graduate course, some to Great Britain and some to France, preparatory to their duties as members of the Construction Corps. The young men so selected have frequently carried off the highest honors abroad, and none of them have failed to graduate with distinction. The preliminary training received at the Academy gives unusual advantages.

It would be difficult to devise any system of selecting and training those who are to build and repair our ships in the future likely to produce better results than this. Certainly no course could be suggested better calculated to teach the science and theory of modern naval architecture, but it has occurred to me that the system might be extended. When these young men have completed their education abroad they are now put to work in the Bureau of Construction and Repair, in Government navy-yards or at private shipyards where Government vessels are building. Their only experience at sea in naval vessels has been the short cruises they took from the Academy. It is true that the work of shipbuilding is done on shore, but it is probable that all great designers of ships seek and enjoy more opportunities of seeing the performance of their handiwork under the conditions to which it is finally subjected than are at present permitted to constructors in our Navy.

The Department has therefore inaugurated the policy, which it hopes may eventually prove useful, of sending assistant naval constructors, after they have acquired some practical experience in shipyards, to sea for cruises of moderate duration, to make themselves familiar with the actual working of the various details of shipbuilding, to observe and note the action of the vessel and its fittings under all possible conditions of service, making reports thereon to the Department, and to perform such other duties as the commanding officer may require. It is expected that the constructor so detailed will, while thus acquiring knowledge that will fit him for the performance of his duties on shore, also be of much use in assisting to dock the ship abroad and in making repairs to vessels of the fleet to which he is attached. He will likewise have extended opportunities of inspecting foreign vessels and the manner in which work is done in foreign shipyards.

The needs of the service have so far permitted the detail of only one assistant naval constructor to this duty, and he has been attached to the North Atlantic Squadron.

ORDNANCE.

The system of gun construction adopted when the reconstruction of the Navy was undertaken remains unchanged in its general features, and is considered fully equal if not superior to any that has since been

tried here or abroad. Of the 539 guns—from 4-inch to 13-inch caliber—thus far ordered 483 are wholly or in great part completed and 308 are afloat.

The admirable gun plant at the Washington Navy-Yard has been from time to time improved to keep it, in all its appliances, fully abreast of the times. Important modifications in the breech mechanism of guns, tending to secure greater rapidity of fire and security for gunners, have been adopted, many of which are devices of our own officers, and alterations have also been made in the length of guns.

The test of the Hurst 8-inch gun and ammunition having shown the impracticability of the system, the Department has had this gun converted into a service 10-inch rifle, it having been specially designed with such view.

The experimental 8-inch nickel-steel gun referred to in my last report is not yet completed, difficulties having occurred in its assembling.

The extension of the rapid-fire principle to the 6-inch caliber having been decided upon, the gradual conversion of the older guns of this caliber will be undertaken, the cost of conversion being inconsiderable. Even if the expense of the change were much greater, the increase of efficiency would justify the undertaking. The wonderful efficacy of rapid-fire guns was strikingly illustrated in the battle off Yalu in 1894 between the Japanese and Chinese fleets.

A boat and landing gun of 3-inch caliber, using fixed ammunition, has been decided upon, and a number of these guns will be at once manufactured.

The Department has fixed upon the 13-inch caliber for the main battery guns of the new battle ships, tests at the naval proving ground having conclusively demonstrated the superiority of this caliber over the 12-inch and the necessity for the higher power in order to meet recent improvements in armor.

The wisdom of this decision has already been fully demonstrated in the test of the 14-inch side armor of the *Iowa*.

Primarily this test was for the purpose of determining the ballistic status of this group of armor and the ability of its supports upon the ship to withstand and distribute the energy of the impact of projectiles which failed to perforate the armor.

The target, which represented a section of the *Iowa's* side, withstood the attack of the 12-inch gun, using the best modern projectiles, with a striking velocity of 1,800 foot-seconds, the energy developed by this velocity corresponding to that produced by a full charge at 1,500 yards range. As oblique impact is fatal to the projectile, unless greatly superior to the plate on rectangular impact, and as the vast majority of impacts at all ranges in action will necessarily be oblique, it is evident that both gun and projectile were employed in this case under the most favorable conditions. Such armor, in fact, may be declared to be impenetrable to the attack of the 12-inch gun under battle conditions.

The structure was then attacked by the 13-inch gun with the same striking velocity of 1,800 foot-seconds. The projectile perforated the armor belt, carrying fragments of it through the backing and plates representing the ship's side and various bulkheads behind the armor passage. The oak supporting timbers were cut, and the shell was only brought to rest when it had penetrated 12 feet into the sand butt. The projectile, in fact, possessed such a surplus of energy over that required to perforate the plate when striking it at right angles that it was plainly apparent that the 13-inch gun is superior to this armor even at considerable angles of impact, and would therefore be capable of destroying or disabling a ship protected by it in actual battle.

The armor itself was of the reforged, face-hardened class and was manufactured by the Carnegie Steel Company. This variety of armor is believed to be far superior in resistance to any other of approximately the same thickness now being manufactured abroad. For several years the question of armor has been carefully studied in this country, and the results of the systematic series of experiments carried out at the Indian Head Proving Ground show that great advances have been made, and that the resistance of the armor now readily manufactured is considerably greater than the maximum obtainable one year ago.

It is very gratifying to be able to state that the behavior of the structure supporting the armor in this test was excellent, showing that the methods employed in the construction of the *Iowa* would enable the ship to withstand without injury any blow that failed to perforate the armor.

In my last annual report I called attention to the necessity of a reserve supply of ordnance in the following words:

"The guns required for the new vessels heretofore authorized are now so nearly completed that the construction of a sufficient reserve supply should be commenced without delay, and the Department recommends an appropriation to that end.

"The most elementary maxims warn us that if it be worth while to maintain a Navy at all we must also have a reserve supply of ordnance and ordnance stores, and certainly we need not call on military science to tell us that our reserve of naval vessels is of no value without guns.

"Congress should give careful attention to the ordnance requirements of vessels that are liable to be called into service as auxiliaries in time of war, in accordance with the acts of Congress approved March 3, 1891, and May 10, 1892, providing that steamers registered under the provisions of said acts can be used by the United States as transports or cruisers. To mention no others, the *Paris* and *New York*, of the American Line, are now receiving large sums of money annually on condition that they hold themselves in readiness to serve the Government whenever demanded. When they hauled down the English to hoist the American flag they were receiving pay from the British Govern-

ment to hold themselves in readiness to serve that nation, and the English had guns and gun mounts ready to be put upon them at a moment's notice. We have now been paying subsidies to these ships for months, and have not a gun to put upon them.

"Under treaty provisions neither the United States nor the English can keep more than one small naval vessel upon our Northern lakes. So far the two countries are matched. In case, however, a war should unfortunately break out between them, Great Britain could promptly furnish guns and gun mounts to her merchant marine on the lakes, and though their marine is far inferior to ours in strength, the British might master those waters and do incalculable damage to our lake cities. If we had a reserve of ordnance and ordnance stores we could dominate those waters without question.

"The latest and one of the most impressive lessons in all history is now being taught by China and Japan. A nation, the most populous in the world, able to put millions of fighting men into the field, is now, after suffering many disasters, scouring Europe and America for munitions of war. It relied upon its numbers. Now it is buying discarded guns and discarded ammunition, whatever it can get, to aid in repelling the assaults of a nation vastly its inferior in numbers."

Congress having heretofore failed to appropriate any portion of the $500,000 asked for in pursuance of those suggestions, I most earnestly repeat and emphasize them. Since the date of this recommendation two other fine ships, the *St. Paul* and the *St. Louis*, have come into our auxiliary navy, and they are as yet without armament. The Department is exercising at present every power vested in it by law to secure guns and ordnance material, but it is much hampered by the want of specific authority and necessary appropriations.

POWDER.

The problem of a satisfactory supply of powder for the larger guns has not yet reached complete solution. Thus far it has been found impossible to obtain a regular supply of powder for either the 12-inch or 13-inch guns which will give the desired muzzle velocity to the projectiles without exceeding the prescribed limit of pressure in the bore. The margin of strength with our guns is sufficient to make it safe, so far as explosives are concerned, to allow a powder pressure largely above that to which they are subjected by our present practice, but such increased pressure has the disadvantage of causing increased erosion of the bore, with a corresponding reduction in the lifetime of the gun.

E. I. Du Pont De Nemours & Co., of Wilmington, Del., and the California Powder Company, of Santa Cruz, Cal., supply all the powder used in the naval service. They have little difficulty in meeting the requirements for the smaller calibers now, and it is hoped that after some further experience an equal proficiency will be attained in manufactures for the 12-inch and 13-inch guns.

SMOKELESS POWDER.

The method of manufacturing smokeless powder in use at the Naval Torpedo Station two years ago has been abandoned, as it was found that the powder then made, though at first satisfactory, would not keep. This difficulty seems to have been entirely overcome. The smokeless powder now being manufactured there has been subjected to the severest tests, with results entirely satisfactory.

This powder is not only nearly smokeless, but its ballistic power is higher, and the residue much less than of that now in use.

Smokeless powder manufactured at the torpedo station is now issued for the service of the 6-pounder rapid-firing guns, and it is expected that similar powder, suitable for larger calibers, will shortly be ready for service use.

GUN MOUNTS.

During the past year a large number of heavy gun mounts have been built, nearly all of which are of the type now on board the *Monterey* and *Amphitrite*. Reports from these mounts show gratifying results both for speed and general efficiency. The Department contemplates, however, a radical step in advance, and the *Iowa's* 12-inch turret mounts now being built at the Naval Gun Factory are to be worked largely by hand power. The advantages of dispensing with machinery are obvious.

Sixteen 8-inch spring-return turret mounts have been built during the year for the *Indiana* and *Oregon*. Each mount has been thoroughly tested at the proving ground, and mounts of the same kind are being built for the *Massachusetts*, *Brooklyn*, and *Iowa*.

An improved 5-inch rapid-fire carriage has been tested and the design adopted for the ships now building. A further improvement in this type has been projected, by which the port opening will be reduced to a minimum.

PROJECTILES.

The principal work during the year in the domain of projectiles has been the development of semi-armor-piercing shell, which, while strong enough to pierce a considerable thickness of armor, also has capacity for a large bursting charge. A contract made with the Sterling Steel Company for 13-inch shell to carry a 50-pound bursting charge through 7 inches of armor has been successfully filled, and one for similar 8-inch shell has been made with the United States Projectile Company, of Brooklyn, N. Y. These latter shell are required to pass unbroken through 4 inches of steel and carry a bursting charge of about 12 pounds. The Carpenter Steel Company and the Sterling Steel Company have completed the deliveries of all the armor-piercing shell contracted for.

SMALL ARMS.

The caliber and general characteristics of a small arm for the naval service had been determined at the date of my last report, and during the year a breech and magazine action have been selected, after competitive tests. The arm selected is the invention of J. P. Lee, of Hartford, Conn., and is known as the "Lee straight-pull rifle," from its novel feature of being actuated by a simple forward and back movement of the bolt. The doing away with the usual movement of rotation of the bolt adds greatly to the rapidity of fire, which reaches 40 rounds in one minute even in unskilled hands.

After advertisement, a contract has been entered into with the Winchester Repeating Arms Company, of New Haven, Conn., the lowest bidder, for 10,000 of these rifles—deliveries to begin in ten months and to be completed in one hundred days thereafter.

It may be of interest to insert the following extract from the report of the Chief of the Bureau of Ordnance:

In making what may appear a radical departure in its selection of a caliber smaller than as yet adopted elsewhere and a system differing essentially from any other in actual use the Bureau is convinced that it is looking to the future. Each step which has been taken in the development of the modern small arm has been an increase in rapidity of fire or a decrease in caliber, and it is surely wise to attempt to advance with one stride as far as existing conditions allow toward the goal to which the world is moving with slow steps. It may be that the wished-for limit has not been attained, but it is safe to say that the advantages of a further decrease of caliber will be insignificant in comparison with those already gained, and that a further material increase of rapidity of fire will only be brought about by the adoption of the automatic rifle.

The automatic system will surely be applied to shoulder guns in the future and caliber will probably be further reduced, but the Bureau has adopted the nearest approach to an automatic gun which is as yet fully developed and the smallest caliber whose successful manufacture is fully assured. But so many misconceptions appear to exist on the subject of reduction of caliber that it will be well to briefly set forth the reasons which justify it.

The advantages of the small caliber are: Greatly increased velocity, flatness of trajectory and penetration, greatly diminished weight of ammunition, and less shock of recoil, as illustrated by the following table:

Arm.	Caliber.	Muzzle velocity.	Danger space for 5 feet 9 inches.	Penetration in pine at 500 yards.	Number of rounds in 8 pounds' weight.	Energy of recoil.
		Foot-seconds.	*Yards.*	*Inches.*		*Foot-pounds.*
Springfield	.45	1,316	405	10	75	27
Austrian Mannlicher	.315	2,073	555	18	128	10
United States Navy	.236	2,460	700	23	170	7

In other words, the change in the Navy caliber from 0.45 to 0.236 will result in a lighter gun, less shock of recoil, almost double muzzle velocity and danger space, more than double penetration, and a more than double quantity of ammunition carried on the person.

These are enormous advantages, and, moreover, they are not theoretical only, but are actual results. Let us see what can be alleged to balance them. There are two disadvantages which attend reduction in caliber and the consequent reduction in weight of bullet: The wounds produced by small-caliber bullets will frequently not be sufficient to put the wounded out of action, and their shock will not stop the onset of excited men at short range.

In general answer to these objections it may be said that, even granting them to the fullest extent, they are insignificant as compared with the counterbalancing advantages. The battle of the future will be fought at long range, and men will not live to come to close quarters with an enemy who stands his ground. Moreover, out of 100 men wounded in action, however slightly, at least 99 will go to the rear without stopping to investigate the severity of their wounds. If the small caliber gives three times as many hits, as it will, we can well afford to have each hit less effective. But it is not true that the injury produced by the blow of a very small bullet is so slight; frequently it is much more terrible than the effects of the large caliber. The modern bullet, of lead with a thin steel jacket, under certain circumstances produces what is called an "explosive effect."

Two simple experiments will illustrate this: (1) Fire through the side of an opened-topped bucket full of water and the iron hoops will be ruptured and the bucket burst open; (2) fire at short range against some resisting material like hard oak, and after small penetration the bullet will bulge, its jacket split open, and the contained lead spurt out and cut its way onward in jagged holes. The first of these experiments illustrates the action of the small-caliber bullet when it enters any organ of the human body which contains a considerable quantity of fluid. The energy due to the enormous velocity of the bullet is imparted to the elastic particles of the fluid and they are driven from its path against the retaining walls of the organ and burst them. The second experiment shows what happens when the bullet meets bone whose resistance to perforation is sufficient to upset it. In both cases the wound of the small caliber is much more terrific than ever produced by the slow-moving bullet of large caliber. Moreover, these "explosive effects," being due to very great striking velocity, increase in number as range decreases.

Those who decry reduction in caliber look only upon its attendant disadvantages and greatly exaggerate them, while they entirely fail to take into account overwhelming advantages which not only justify the reduction but compel it.

SUBMARINE BOATS.

After careful consideration the Department finally decided to have constructed and exhaustively tested a submarine boat of the Holland type, and accordingly, on March 13, 1895, a contract was entered into with the John P. Holland Torpedo Boat Company of New York for the construction of a submarine torpedo boat in accordance with plans and specifications submitted by the above-named company and approved by the Department.

The contract price for the boat is $150,000, and it is to be completed and ready for delivery within twelve months from the date of contract, under penalties for delay. The remaining $50,000 of the sum appropriated by Congress is to be expended under the direction of the Bureau of Ordnance in conducting experiments with this boat after its delivery to the Government.

AUTOMOBILE TORPEDOES.

All contracts for automobile torpedoes have been completed, giving the Navy a total supply of 196 torpedoes of the two types adopted, the

Whitehead and the Howell. Considering vessels built and building, this number allows a reserve supply of only 32 torpedoes, a number barely sufficient to make up for practice casualties. Provision should be made for a reserve supply of 100 torpedoes, as well as for the additional number needed for torpedo boats and other vessels to be built.

ARMOR CONTRACTS.

Since the date of my last report 5,172 tons of armor have been delivered, of which 4,862 tons were harveyed.

The contracts of June 1, 1887, with the Bethlehem Iron Company, and of November 20, 1890, with the Carnegie Steel Company, have been completed, and the deliveries of armor under the contracts of February 28, 1893, and March 1, 1893, will also be completed within a few months.

The high cost of the armor thus far purchased has been due to the very large expenditures for the extensive plants necessary to modern armor manufacture. Now that these plants have been erected, it is confidently expected that in future contracts a considerable reduction from former prices will be obtained.

Experience in manufacture, as well as increased facilities of plant, render it certain that hereafter armor can be supplied by the two armor companies quite as rapidly as it will be required by the shipbuilders.

It is gratifying to note that during the year both the Bethlehem Iron Company and the Carnegie Steel Company have received large orders for armor from a foreign country. This is convincing proof of the excellence of their product.

The following armor has been delivered since October 1, the date of the report of the Chief of Bureau of Ordnance:

Description.		Oil-tempered.	Harveyed.
Two after diagonal plates, Iowa	tons	.....	51.62
Conning tower of the Iowa	do	28.00	.....
Conning tower of the Brooklyn	do	20.00	.....
First 13-inch B. L. R. turret, Oregon	do	.....	152.00
		48.00	203.62
Report up to October 1	do	310.16	4,861.73
Total delivered, since October 1, 1894, to date	do	358.16	5,065.35

STEEL INSPECTION.

It is believed that no naval establishment demands higher classes of material for ships or exacts more rigid inspection than ours. The work of inspection, as done by our inspectors, comprises a chemical analysis of every heat of metal, numerous analyses of drillings and, for each piece of finished material, conformity to required shape and size, freedom from surface defects, uniform soundness, and the determination

of its tensile strength and ductility. Standards have been continuously raised as ascertained improvements permitted, and there has therefore been a continued increase in the strength and reliability of material, leading toward an increase in the available space in a given displacement of vessels to be constructed. The work of this board has been efficiently conducted under Capt. P. F. Harrington, its president.

CHANGES IN THE BUSINESS METHODS OF THE NAVY DEPARTMENT.

I have made a careful investigation of the business methods of the bureaus and offices of the Navy Department, for the purpose of securing a more simple and speedy transaction of the public business, and as a result of this investigation have instituted certain changes, to which your attention is invited.

Unnecessary copies of correspondence have been prohibited. All reports to the Department not needed have been stopped; others from ships and navy-yards where containing irrelevant or unnecessary matter have been reduced and simplified, and the sending of duplicate reports to bureaus and offices only incidentally concerned has been inhibited in cases where such report was readily accessible in the office or bureau of the Department to which it pertained.

Prior to January 11, 1889, each bureau exercised exclusive jurisdiction over all matters pertaining to purchases from appropriations relating to its maintenance and kept all the accounts relating to the same. Years ago Secretary Whitney concentrated in one bureau, that of Supplies and Accounts, nearly all the accounts of the Navy Department, the beneficent effect of which has been alluded to by me in previous reports.

Secretary Tracy continued and even extended this system, but it was found upon investigating in detail the business methods of the Department, that although the system of accounts kept in the Bureau of Supplies and Accounts embraced all the appropriations under the naval establishment, the several bureaus were nevertheless each keeping accounts of the various appropriations under its cognizance, differing in character and extent and based upon statements and returns varying in form and frequency from each other and from the returns made to the Bureau of Supplies and Accounts. As all purchases and payments are made under the direction of the Bureau of Supplies and Accounts, and as it keeps all the accounts for every bureau, and is charged with all the papers and all the duties pertaining thereto, I considered that the various and varying systems of accounts kept by the several bureaus other than Supplies and Accounts were wholly unnecessary, and therefore they were all discontinued.

The keeping of these accounts by other bureaus could not be considered in any sense a check upon the Bureau of Supplies and Accounts, as these other bureaus were not getting all of the information concerning purchases received by the Bureau of Supplies and Accounts. The

only excuse for this duplication of accounts lay in the fact that chiefs of bureaus needed information as to the condition of their appropriations, the cost of labor and material, or, as the case might be, of the manufacture of articles under their cognizance. This information, it was provided, should be furnished them, in the matter of their appropriations, by weekly statements of balances, and in the matter of the cost of labor and material, by transcripts from job order books and records of finished jobs kept at navy-yards.

By these changes the Department has been enabled to reduce its clerical force by nine.

DOCKS.

The Department has been recently somewhat inconvenienced for want of a dock large enough to take the larger class of our naval vessels. The *Texas*, it was believed, could not be safely docked at the Norfolk yard, and it was therefore decided to send her to the Brooklyn yard, where, though the dock was of the same size as that at Norfolk, the higher tides permitted the ship to enter it with greater assurance of safety. By taking advantage of a high tide the ship was docked without touching. This want of larger docks has not been unforeseen, and if builders had fulfilled their contracts we should now have two docks on the Atlantic coast able to take any ship in service or now building.

The large dock at Port Royal, S. C., should have been finished according to contract on April 23, 1893. There were many delays in the work, but it was reported as ready for use some time since, and the *Texas* might have been docked there instead of being sent to New York but for interrupting certain work now being done on the dock which the Department decided upon for the purpose of further strengthening this structure. This dock, it is believed, will be turned over to the Government within the present calendar year.

Dock No. 3, now under construction at the Brooklyn Navy-Yard, will also be large enough to accommodate our largest vessels. This dock was to have been completed by September 20, 1895, but the builder, Mr. Gillies, failed to comply with his contract. When it became apparent that this contractor was behind with his work the Department summoned him to show cause why his contract should not be annulled. It appeared that he had undertaken the work at a very low price, that he was exerting himself faithfully, but that he had encountered difficulties which he had not foreseen, chief among which was a want of ready money, the capitalist who had undertaken to supply him having refused further advances.

After carefully considering the whole question, it appearing, among other things, that Mr. Gillies had made arrangements by which he would not thereafter be embarrassed by want of money, I decided to give him another opportunity to make good his contract. He was accordingly

allowed to go on with his work until it became apparent that he would not be able to comply with his promises. The contract with him was thereupon, after due notice and hearing, annulled, and Messrs. T. and A. Walsh were employed to complete the dock. Work upon it is progressing satisfactorily, and it is expected to be ready for use by June 1, 1896. We shall then have upon the Atlantic coast two docks of sufficient size to accommodate our largest vessels.

When our present building programme is completed we shall have nine ships which can not, when fully loaded, safely enter any of our docks on the Atlantic coast except these two. It is believed we should have another large dock on the Atlantic coast, and it is recommended that this be built at the Norfolk Navy-Yard, which is already amply fitted for repairing ships. Vessels ordinarily only require about ten days each in dock when the bottom is to be cleaned and painted, and three large docks will certainly be sufficient for these nine ships.

There should be a dockyard and repairing station on or contiguous to the Gulf of Mexico for the use of vessels cruising in the Caribbean Sea and other southern waters, but it is for Congress to say whether the condition of the Treasury is such as to justify it in undertaking the construction of such a dock at present.

There is no dock at the Mare Island Navy-Yard large enough to accommodate the *Oregon*, but this is the only vessel we have on that coast or in Asiatic waters that can not be docked at that yard. To build now another dock at Mare Island to accommodate this ship and such others like it that may in the indefinite future be constructed would seem to be unnecessary if we are to utilize the dock now being built on Puget Sound, which will be completed within a few months and is designed for the largest class of vessels.

The Department has been strongly urged from many quarters to recommend the construction of new docks not only at Norfolk, but also at Portsmouth, N. H., at Boston, at League Island, and at Mare Island, and these requests are made in spite of the difficulties which it is well known are now experienced in keeping together at the several yards now open any efficient and skilled body of workmen. In my opinion, to undertake all this work would be extravagant, and I feel sure it would lead to much unwise expenditure of money in the future. The work of docking, cleaning, and repairing ships must of course always go on, and the Government should always be possessed of ample facilities to do such work. We should have shipyards in condition not only to repair, but also, if necessary, to build ships of war. This business of the Government, however, should be conducted on business principles, and it would seem to be exceedingly unwise to unnecessarily subdivide and distribute work of this character.

The census will show that the average cotton mill in the United States has to-day more than three times as much capital and turns out probably ten times as much work as it did fifty years ago. So of furnaces and foundries and manufactories of all kinds. This is so

because it pays to concentrate capital and energy, and it does not pay to scatter and subdivide.

Secretary Chandler saw and pointed out that we had too many navy-yards among which work was being distributed and apportioned, too many organizations, too many foremen and leading men to support, too many plants to maintain, and he wisely closed certain of our yards. Secretary Whitney, who succeeded him, wrought upon similar lines. He stopped all repair work upon ships, except at the Brooklyn, Norfolk, and Mare Island yards, concentrated ordnance work at the Washington yard, and equipment work at Boston. To build docks now at Portsmouth, Boston, and League Island would inevitably entail the undoing of all this work of concentrating and the doing of repair work again at each of these places, and of course the maintenance at each of a separate plant and of an additional organization. The teachings of experience collected in Government census reports should not be entirely overlooked by the Government itself in the conduct of its own business.

In my opinion it would be wise to invest whatever moneys are to be expended upon the Navy, beyond its current needs and the necessities of existing repair plants, in the construction of new ships and not in building docks.

LABOR AT NAVY-YARDS.

Four years ago the registration system of employing laborers and mechanics at navy-yards was inaugurated, and it has now come to be generally understood by applicants that it is necessary to register with the labor boards in order to be employed, that after registering, workmen are taken on in the order of registration, that political or other influence plays no part in securing employment as a laborer or mechanic and that the Department does not interfere in the matter of employing or discharging workmen at navy-yards unless the rules have in some way been violated. As a result there are few requests made upon the Department for the employment of laborers and mechanics at navy-yards, whereas much time was formerly consumed in hearing and answering applicants and their friends.

The rules governing the employment of labor at the navy-yards were devised and put in force by my predecessor four years ago. That the work was well and faithfully done sufficiently appears from the fact that very few important changes or amendments have so far been found necessary. It appeared, however, during the last summer, when work was running short in the several yards, that the rigid enforcement, always insisted on, of rules preventing transfers from one trade even to another allied trade or occupation, and some other kindred provisions, were so operating as to render it exceedingly difficult to keep together such a force of skilled workmen as every business establishment finds it important to maintain. To remedy these and certain other defects which experience had pointed out it became necessary to make a some-

what extended revision of the whole system. This I have done after visiting the yards and consulting carefully with the commandants at Washington, Norfolk, and Brooklyn.

The several amendments made, though none of them are radical, it is believed will tend to the betterment of a system which has so far met with general commendation throughout the service. To give an idea of the extent and importance of the work done, it may be stated that from September 1, 1894, to August 31, 1895, there were 3,868 mechanics and laborers employed through the boards of labor employment at the various navy-yards. The number of appointments made through the United States Civil Service Commission in the departmental, railway mail, Indian, customs, and postal services, as shown in the last annual report of the Commission, was 4,372.

NAVAL SUPPLY FUND.

Under the act of March 3, 1893, the Secretary of the Treasury was authorized to cause "general account of advances" to be charged with the sum of $200,000, this amount to be carried to the credit of a permanent naval supply fund, to be used in the purchase of ordinary commercial supplies for the naval service, and to be reimbursed from the proper naval appropriation whenever the supplies purchased under the fund are issued.

The provisions of the act have been carried into successful operation and its wisdom clearly established. Reimbursements have been promptly effected, so that with the sum invested, supplies amounting in value to nearly $500,000 have been purchased, the greater portion during the past fiscal year. It has thus been made possible to keep on hand a stock of such articles as are frequently called for, and many of the delays and much of the increased cost incident to emergency purchases in open market have been avoided. Not only has economy in the first cost of supplies resulted, but a far better quality is furnished. The rigid specifications of the Department require the delivery of a quality not always obtainable in the market, but by purchasing in larger quantities and obtaining the wider competition secured by public advertisement, the Department is enabled to make contracts for supplies of the very best quality at the lowest possible prices.

Formerly from 50 to 75 per cent of the deliveries of certain articles of which there is a large consumption were purchased in open market. Since these articles have been carried in stock under the supply fund, open purchases have been reduced to 3 and 4 per cent, and at a reduction, too, of 20 per cent in cost. This year the Paymaster-General reports as follows:

> The increase in competition since 1893, when the naval supply fund was established, has been between 21 and 22 per cent. The increase in the number of different firms among which contracts have been distributed has been between 33 and 34 per cent.
>
> The number of entirely distinct firms or business establishments to which contracts have been awarded in the past year is 335.

The benefits of the fund, however, would be greater if the amount allowed to be so used were larger and the system extended. At present it is only possible to maintain stocks of supplies at three navy-yards, and the variety of the supplies is restricted.

It is therefore recommended that the Secretary of the Treasury be authorized and directed by Congress to cause "general account of advances" to be charged with $300,000 in addition to the $200,000 named in the act of March 3, 1893, creating the naval supply fund. This will merely affect the application of funds appropriated and will not involve any increase in the amount of appropriation.

MISCELLANEOUS RECEIPTS.

A detailed statement prepared in the office of the Auditor for the Navy Department will be found in the appendix, showing deposits in the Treasury, from November 1, 1894, to November 1, 1895, arising from the sale of condemned stores and materials, nautical books and charts, fuel and clothing; from rents of Government property; from supplies furnished to and work performed for other branches of the Government, and from other lawful disposition of public property under the cognizance of the Navy Department.

The total amount so deposited was $53,299.53, of which sum $16,801.40 was covered into the Treasury as "Miscellaneous receipts on account of proceeds of public property," as required by section 3618 of the Revised Statutes, and the remainder, $36,498.13, carried, as authorized by law, to the credit of the proper appropriations, to be applied to naval purposes.

PURCHASE OF COAL.

Special attention has been given by the Bureau of Equipment during the past year to the purchase of coal for our vessels, contracts having been made in advance at certain points where it was known vessels would touch for the delivery of coal. The Department has also insisted upon and obtained large reductions in the prices of coals furnished by certain dealers abroad from whom the necessities of the Navy require habitually large purchases of fuel. Coal has thus been obtained at a lower price than heretofore. By reason of this and other economies in expenditure it is estimated that, notwithstanding the fact that more cruising has been done than is usual, about $25,000 will be turned back into the Treasury from the appropriation "equipment of vessels.

MOVEMENTS OF SHIPS IN COMMISSION.

The situation during the past year has required the vessels of the Navy to be constantly cruising.

The North Atlantic Squadron, composed of five vessels, under the command of Rear-Admiral R. W. Meade, cruised during the past winter in the West Indies and the waters adjacent thereto. In May, Rear-

Admiral R. W. Meade was relieved of the command at his own request, and Rear-Admiral F. M. Bunce was ordered as his successor.

This squadron at present consists of the *New York* (flagship), *Columbia*, *Amphitrite*, *Cincinnati*, *Raleigh*, and *Montgomery*, and will in a short time be reenforced by the *Maine* and *Texas*. The *Minneapolis* has recently been detached from the North Atlantic Squadron and sent to Turkish waters.

Some of the vessels attached to the North Atlantic station have been recently used as a school of instruction in fleet maneuvers, signaling, target practice, and other squadron exercises.

Boards of officers have frequently considered and revised the fleet tactics and the signal books in use in the Navy, but the inability of the Department for many years to withdraw vessels from other duty has prevented the assembling for a suitable length of time of a sufficient number of vessels to practically test the prescribed systems. Four vessels of this squadron cruised north of New York in August last, and five have since then been cruising off the capes of the Chesapeake. During these cruises the relative tactical qualities of the vessels have been determined, and the prescribed evolutions have been repeatedly performed by the different methods given in the Fleet Drill Book. All matters connected with the handling of the ships have been carefully studied and reported upon by the captains of the ships and by boards of officers ordered by the commander-in-chief for this purpose.

The Asiatic squadron, consisting of the *Baltimore* (flagship), *Charleston*, *Detroit*, *Concord*, *Yorktown*, *Monocacy*, *Machias*, and *Petrel*, remained under the command of Rear-Admiral C. C. Carpenter from the date of my last report until the 16th day of the present month, when at his own request he was relieved. Commodore F. V. McNair has been ordered to the command. All the vessels of the squadron have been actively employed in consequence of the recent war between China and Japan, and under Admiral Carpenter's able and judicious control have rendered most efficient service in the protection of our interests. The *Olympia* is now en route to Yokohama to relieve the *Baltimore*, which will return to the United States.

The Pacific squadron, composed of the *Philadelphia* (flagship), *Monterey*, *Marion*, *Bennington*, *Alert*, and *Ranger*, has continued under the command of Rear-Admiral L. A. Beardslee. For the protection of our interests a vessel has been kept at Honolulu, and the ports of Central and South America have been constantly visited.

Rear-Admiral C. S. Norton assumed the command of the South Atlantic station in January last. The squadron consists of the *Newark* (flagship), *Castine*, and *Yantic*. The *Yantic* has cruised in the Rio de la Plata and adjacent waters. The *Castine* has visited the ports on the east coast of Africa and the island of Madagascar.

The European squadron, consisting of the *San Francisco* (flagship) and *Marblehead*, under the command of Rear-Admiral W. A. Kirkland, has

been principally employed in protecting the interests of our citizens residing in Syria. In June last this squadron was temporarily reenforced by the *New York* and *Columbia*, when the whole force assembled at Kiel to take part in the ceremonies attending the opening of the North-Baltic Sea Canal.

The German Emperor expressed great pleasure at the compliment paid him by the President of the United States in sending so fine a squadron to participate in the ceremonies, and the many compliments paid by experts and non-experts to our ships, their officers and men, while at Kiel were exceedingly gratifying to the Department, and are no doubt pleasing to our shipbuilders and to the American people at large.

Rear-Admiral Kirkland has been relieved and Rear-Admiral Selfridge is now in command of this squadron.

The *Alliance* and *Essex*, training ships for naval apprentices, have made their usual cruises; the *Lancaster* has recently been assigned to similar duty; the *Pinta* remains in Alaskan waters on special service; the *Thetis* is continuing the survey of the coast of California, and the *Michigan* has been engaged in surveying work on the Great Lakes. The *Bancroft* and *Monongahela*, practice ships for the naval cadets, made their usual summer cruises. The torpedo boat *Cushing*, in May last, made a cruise to Florida for the purpose of testing the inland water routes for vessels of her class. During the summer she has been attached to the torpedo station and used for purposes of instruction.

OLD MONITORS.

The old monitors which were for years kept at considerable expense at a point on the James River where there was no naval station, have been transferred to the League Island Navy-Yard, where it is estimated they can be cared for at a saving to the Department of about $35,000 per annum. This saving results largely from the pay of 72 men who are thus discharged to service on cruising vessels.

NAVAL CONSTRUCTION ABROAD.

The present status of the principal foreign navies is shown in the appended tables, giving the number of vessels, armored and unarmored, by classes, in service, or authorized or building. An inspection of these tables will show that armored vessels constitute 44.4 per cent of the whole, the remaining 55.6 per cent consisting of unarmored vessels, of which a very large proportion (nearly 34 per cent) are protected cruisers.

Great Britain, as usual, is leading both in the number and strength of ships in service and in building programme, with 274 ships in service, not including torpedo boats; she has 42 vessels now under construction, of which 10 are battle ships. It will be observed that in accordance with England's policy of placing her first line of defense at the enemy's coast, no coast-defense vessels are building for that country. The dis-

placement of the first-class battle-ship in her present programme is 14,900 tons; that of the second class, 12,350 tons.

France, with 144 effective vessels in service, exclusive of torpedo boats, has a building programme calling for an increase of 33 vessels, of which 5 (possibly 6) are battle ships and 4 are armored cruisers.

Russia has 18 ships building, of which 15 are armored; in service, 100.

Italy has in service, 71 vessels; the number building is, armored 8 (6 battle ships) and unarmored 7.

Germany has 74 efficient ships, and is building 4 armored and 4 unarmored.

Spain is showing increased activity, and is building 10 additional vessels, of which one-half are armored, which will make a total effective strength of 52.

The Dutch navy numbers 92 effective vessels; the additions are to be 3 armored and 4 unarmored vessels.

On this continent Argentina, Brazil, and Chile have, all told, ordered abroad 6 armored and 9 unarmored vessels.

For the Asiatic powers there are now building in England 2 battle ships for Japan, and a third will probably be commenced soon. These are of the English *Royal Sovereign* type, of over 14,000 tons displacement, and it is proposed to submit to the Diet a programme looking toward further increase, which, with the addition of the vessels captured from China in the late war, will place Japan among the important naval powers of the world. It is also rumored that China is looking toward the rehabilitation and further increase of the navy as soon as affairs become settled and the money available.

TORPEDO BOATS.

Activity in building these auxiliary coast-defense craft remains about the same as in my last report. France leads in the possession of torpedo boats, with 218 in service and 54 building; Great Britain has 189 in service and 62 under construction. Spain is doubling her torpedo boat force, and Japan, taking a lesson from her experience in the late war, and having already (with those captured from the Chinese) a total of 40 in service, is building 17 more.

These tables will show that while the 15 other countries mentioned have altogether 1,206 torpedo boats in service (Argentina, with the smallest number, showing 21), the United States has only 2. The average number building for these other countries is 14 and a fraction. We have authorized and building 7.

In the following tables gunboats of less than 300 tons, transports, receiving ships, tugs, tenders, and miscellaneous harbor craft are not included.

A.—*General condition of foreign navies.*

	Armored.								Unarmored.										Summary.		Torpedo boats.	
	Battle ships.		Coast-defense vessels.		Cruisers.		Total armored.		Cruisers, protected.		Cruisers.		Gun vessels.		Torpedo vessels.		Total unarmored.					
	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.	In service.	Authorized and building.
Argentina	1	.....	4	.....	.....	1	5	1	3	1	3	.....	4	.....	2	.....	12	1	17	2	21	6
Austria	6	.....	.....	3	4	1	10	4	6	.....	12	.....	6	.....	7	.....	31	.....	41	4	64	6
Brazil	2	.....	5	4	.....	.....	7	4	3	1	7	.....	1	3	1	3	12	7	19	11	22	.....
Chile	1	.....	1	1	1	.....	3	1	3	1	3	.....	.....	.....	2	.....	8	1	11	2	22	Some.
China	.....	.....	.....	.....	.....	.....	.....	.....	3	3	7	2	14	.....	.....	1	24	6	24	6	23	.....
Denmark	1	.....	6	.....	1	.....	8	.....	5	1	4	.....	2	.....	2	.....	13	1	21	1	29	2
France	25	5	21	.....	6	4	52	9	19	15	29	1	26	6	18	2	92	24	144	33	218	54
Germany	13	1	19	2	.....	1	32	4	4	3	13	1	7	.....	18	.....	42	4	74	8	121	8
Great Britain	50	10	11	.....	25	4	86	14	52	22	88	4	14	2	34	.....	188	28	274	42	189	62
Italy	11	6	.....	2	5	.....	16	8	14	3	14	1	11	.....	16	3	55	7	71	15	184	5
Japan	1	3	5	.....	2	.....	8	3	9	2	10	.....	12	1	1	.....	32	3	40	6	40	17
Netherlands	.....	.....	25	3	.....	.....	25	3	2	3	64	.....	.....	1	1	.....	67	4	92	7	39	3
Russia	9	8	23	4	9	3	41	15	1	1	25	.....	20	1	13	1	59	3	100	18	174	16
Spain	1	.....	5	.....	2	5	8	5	3	2	19	.....	4	.....	8	3	34	5	42	10	22	22
Sweden-Norway	.....	.....	18	5	.....	.....	18	5	1	.....	8	.....	8	1	3	.....	20	1	38	6	38	20
	121	33	143	24	55	19	319	76	128	58	306	9	129	15	126	13	689	95	1,008	171	1,206	221+
United States	3	5	16	4	1	1	20	10	13	.....	20	.....	8	9	1	.....	42	9	62	19	2	7

B.—*Building programmes of countries in foregoing table* (A), *percentage of increase in foreign navies, by countries, of the total number of vessels authorized and building* (*171*), *and of torpedo boats* (*221+*).

Nation.	Armored.	Unarmored.	Summary.	Torpedo boats.
Argentina	0.6	0.6	1.2	2.7
Austria	2.4	.....	2.4	2.7
Brazil	2.3	4.1	6.4	.....
Chile	.6	.6	1.2	.....
China	.....	3.5	3.5	.....
Denmark	.....	.6	.6	1
France	5.2	14.1	19.3	24.5
Germany	2.3	2.4	4.7	3.6
Great Britain	8.2	16.4	24 6	28.1
Italy	4.8	3.9	8.7	2.2
Japan	1.7	1.8	3.5	7.7
Netherlands	1.8	2.3	4.1	1.3
Russia	8.8	1.7	10.5	7.3
Spain	2.9	2.9	5.8	9.9
Sweden and Norway	2.8	.7	3.5	9
Total	44.4	55.6	100	100

C.—*Building programme of countries in the foregoing table* (A), *arranged by classes of ships.*

Class of ship.	In service.	Authorized and building.	Total number.
Armored:			
Battle ships	121	33	154
Coast-defense vessels	143	24	167
Cruisers	55	19	74
Total armored	319	76	395
Unarmored:			
Cruisers protected	128	58	186
Cruisers	306	9	315
Gun vessels	129	15	144
Torpedo vessels	126	13	139
Total unarmored	689	95	784
Summary	1,008	171	1,179
Torpedo boats	1,206	221+	1,427+

An investigation of the above table shows that of the total number of war vessels authorized and building abroad (171) the percentage by classes or types of ships is as follows:

Class of ship.	Percentage authorized and building.
Armored:	
Battle ships	12.3
Coast-defense vessels	14
Cruisers	11.1
Total armored	44.4
Unarmored:	
Cruisers, protected	22.9
Cruisers	5.3
Gun vessels	8.8
Torpedo vessels	7.6
Total unarmored	55.6

The increase in torpedo boats (221+) represents over 19 per cent of the number in service.

PERSONNEL.

In my previous reports I have urged the necessity for early action in reference to the personnel of the line of the Navy, and have pointed out the pressing need for legislation upon this subject.

I beg leave to refer to the statements made in my last report and to the specific recommendations laid before the Fifty-third Congress. The Department is not wedded to the plan then proposed. It is fully aware that the system suggested is subject to objections, as, indeed, every scheme that can be devised must be.

To reorganize the line of the Navy so as to bring about the promotion of officers to command rank at an age when still young enough to learn and vigorous enough to be self-assertive, would seem to be all-important. The majority of our officers now approaching command rank are over 50 years of age. These officers come now first into command at a period of life when the habit of relying on others has become a second nature. A very slight examination of the question will show that it presents many difficulties, and it is not believed that any system can be devised that will be perfect, certainly no rational scheme can be invented that will not be objected to by many of those to be affected.

When it is considered that, under the present laws governing promotions in the Navy, second rate as well as first rate officers, all who were not over the average age when they entered the Naval Academy and who can safely pass the ordinary examinations will reach flag rank; that all these will retire as commodores and admirals, and that although they will become commodores and admirals few of them will remain in those grades long enough before retirement to give them any opportunity to acquire experience at sea as such, even if a fleet were

ready for each of them on the very day when commissioned, it will be readily understood that there is urgent need for some change in the system, however numerous and even clamorous the objections may be that are urged against any bill that may propose to take away these privileges.

It goes without saying that any wise measure of relief will regard with the greatest care and tenderness the present and future welfare of all those whose lives have been and are to be entirely devoted to the service of their country, but at the same time it must be fully understood that no officer can by any claim of vested right perpetuate the present conditions if these conditions are evil. That these conditions do now seriously impair the efficiency of our Navy, and that matters are gradually and surely growing worse, admits of no doubt. I most earnestly request that this matter be urged upon the attention of Congress.

ENLISTED MEN.

Last year I recommended an increase of 2,000 men in the enlisted force of the Navy. This recommendation was based upon a careful calculation of the needs of the service to carry into effect the policy indicated and briefly outlined in that recommendation. Congress granted authority to enlist 1,000 additional men. In exercising this authority the Department, having due regard for economy, did not enlist the men authorized until they were imperatively needed, but with the completion of the crew of the *Indiana* the entire 1,000 authorized will have been enlisted. Considering the constantly recurring emergencies of the service, and the number of vessels soon to be completed and put into commission, the Department will undoubtedly require more men, and it is therefore recommended that Congress authorize the enlistment of 1,000 additional men, which, with those already authorized, will make the full number recommended in my last report.

An examination in this connection of the naval estimates and budgets of the principal foreign countries may prove interesting, as it shows a continued increase in the strength of both officers and men. The figures for Great Britain, France, Germany, and Italy for the last five years are given in the following table:

Strength of personnel of principal foreign navies.

Year.	Great Britain.		France.		Germany.		Italy.	
	Officers and men.	Increase.	Officers and men.	Increase.	Officers and men.	Increase.	Officers and men.	Increase.
1891–92	71,000	.....	67,310	.....	17,130	.....	20,682	.....
1892–93	74,100	3,100	68,916	1,606	18,306	1,176	22,292	1,610
1893–94	76,700	2,600	71,071	2,155	19,492	1,186	22,216	— 76
1894–95	83,400	6,700	71,916	845	20,498	1,006	23,430	1,214
1895–96	88,850	5,450	70,925	— 991	21,487	989	24,203	773
Total increase in last 5 years	.....	17,850	.....	3,615	.....	4,357	.....	3,521

It will be observed that while it is a mooted question as to whether the materiel of our Navy or the German is superior, we have of officers and men only 13,460, including marines, and Germany has 21,487. In Germany conscription obtains, and her whole population is, within certain ages and with very few exceptions, subject to military duty either in the army or navy. We, on the other hand, rely on voluntary enlistments. The German Government assigns to its navy its full complement of sailors—enough to man every ship attached to its force. We take into the service only men enough to man the ships that are at one time in commission. Beyond this we have not a single enlisted man save only about 1,100 marines at navy-yards and stations.

Germany's available men are not all at one time in actual service on board ship, but are all drilled and thoroughly trained in their duties, and such as are at any time on shore occupied in their ordinary vocations can be summoned at a moment's notice. In case of war, however suddenly it might come, Germany's navy would be in no lack of men, trained and drilled; and in case of a naval war now when fleets reach any given point so surely and swiftly, readiness, other conditions being at all equal, means victory. In the emergency of a war coming quickly what should we do for men? All allowed by law are enlisted, and all enlisted are already on ships. The *Massachusetts*, the *Oregon*, the *Puritan*, the *Monadnock*, and the *Terror* will soon be ready for commissioning. To man these ships alone we should need 2,000 men.

Our Naval Militia are promising bodies of young and vigorous men, but we can not rely on them alone; they lack organization and training and are insufficient even in numbers. We have, besides the ships just mentioned, a fine fleet in our reserve navy. From the American line alone we could draw four ships—the *New York*, the *Paris*, the *St. Paul*, and the *St. Louis*—a magnificent squadron if armed and manned; but we have not a man to put upon one of them, and no authority of law to accept the services of a single one of the thousands who, in case of need, would volunteer to serve. All this ought not to be. It is the height of unreason to pay heavy subventions to swift ships and call them our auxiliary navy unless we have the means of arming them; it is folly to maintain these ships and procure arms for them if we are never to man them, and certainly it is unwise and shortsighted to defer making any provision by law for procuring the men who are to utilize these vessels until after the emergency of an always possible war shall have arisen.

There is no other nation that has so much of the material of war that is so little prepared to utilize it; that has so much of personnel available and that is so utterly without authority of law to employ it. The Department needs present authority to enlist the thousand men asked for, and this number will be sufficient, if the policy herein outlined be approved by Congress, to answer all the necessities of the Government while we are so fortunate as to be on a peace footing; it will certainly suffice for years to come.

It is also recommended that provision at once be made by law for calling into the service whenever there shall be need of them sailors to man at least all the vessels which are in the pay of the Government and liable to be called into service. A well-considered law by which this may be done should be adopted at once. It must be remembered that the Naval Militia are organized by and are in the pay, so far as they receive any pay, of the several States in which they are raised. Congress appropriates annually only $25,000 to be divided among the militia of all the States, and this is expended in furnishing accouterments and arms. The General Government, beyond this, furnishes to each State, when it can, a ship, and gives the militia besides a few days of drilling each year under naval officers, and does nothing more for them.

It is respectfully suggested that in order to be able to man our reserve fleet and such naval vessels as may not have full crews the President be authorized to enlist in the naval service, upon exigencies to be judged of by him, such of the Naval Militia and other men, not to exceed altogether the number necessary to man all the ships of the Navy and such ships as, under the laws now existing or hereafter to be enacted, the Government may have the right to call into its service for a period of, say, two years, the Government reserving the privilege of discharging when the exigency may have passed.

RESERVE SYSTEM SUGGESTED.

It sufficiently appears from the foregoing statements, all the men allowed by existing law being now in active service, that if the ships at present in commission be kept cruising the additional thousand men asked for will be totally insufficient to man, as completed, all the vessels now authorized. It is true, also, that there are cogent reasons why every new ship should go at once into commission and should cruise for a year. No one who stops to consider carefully, certainly no one in naval circles, ever supposes it possible that a machine so complex as a modern man-of-war could be turned out by the builder without a flaw in any part; journals, pipes, blowers, ratchets, bolts, pistons, shafts, ammunition hoists, turrets, some of these or other things will prove defective, and the ship can never be relied on in all its parts until it gets shaken down by a somewhat extended cruise. This is always, by naval experts, deemed necessary, that defects may be discovered and remedied. There are on board every ship when first commissioned many appliances that are entirely new, and it may sometimes happen that complicated mechanisms which have required in their design and construction the highest degree of skill have never been seen in operation by an officer or man on board.

The enlisted force of our Navy must therefore be sufficient to give to every vessel its initial cruise. This can be done, however, with an

addition of 1,000 men to our present force, by keeping always a portion of our fleet in reserve.

Before entering upon an explanation of this proposition it will be instructive to examine the following brief statements of the methods adopted by some of the principal naval powers. In all these systems regard is had not only to efficiency, but to economy as well. Preliminarily, it may be well to say that the average cost of the several ships shown to be kept in reserve by these powers is believed not to be more than 25 per cent of the expense of the same ships when cruising.

GREAT BRITAIN.

All ships and torpedo boats not in commission are placed in reserve; a part under the command of the commander in chief of the station is called the "fleet reserve," of which Division A includes ships and torpedo boats ready for mobilization and immediate commissioning, and Division B such ships as require moderate repairs or alterations (ships are kept in this division only for the time they are in the hands of the workmen).

A certain proportion only of the full crew is assigned to each ship, usually 1 lieutenant, 1 engineer officer, and 2 or 3 warrant officers.

The dockyard reserve is composed of ships in need of alterations or repairs that require prolonged work at the navy-yards; vessels under this classification are under the control of the admiral superintendent, but have no officers or crews assigned to them.

In March, 1895, the number of ships in reserve, by classes, was as follows:

Type.	In commission.	Fleet reserve.	Dockyard reserve.	Percentage in reserve.
Armored:				
Battle ships	21	27	2	58
Coast-defense vessels	2	6	3	82
Cruisers	15	8	.....	35
Total armored	38	41	5	55
Unarmored:				
Cruisers, protected	20	29	.....	59
Cruisers	65	12	14	29
Gun vessels	2	4	8	86
Torpedo vessels	18	10	6	47
Total unarmored	105	55	28	44
Summary	143	96	33	47

FRANCE.

The French reserve vessels are divided into three categories.

The I category comprises the reserve squadron of the Mediterranean and the northern squadron from October 1 to April 1.

Vessels in this category are fully officered and manned for a part of the year only; during the remainder of the year the complement of men is reduced from one-half to three-fourths of the full complement, but the ships are supposed to be ready to commission and put to sea on twenty-four hours' notice.

The II category comprises vessels that can be made ready for active service in eight days. An armored vessel of this category has on board 1 commanding officer, 1 lieutenant, 1 engineer, 1 surgeon, 12 warrant or petty officers, one-half the engineer's force, and from one-fourth to one-sixth of the remainder of the full complement.

The III category includes vessels not needing extensive repairs, such as may be made ready for war service in twenty days. Thirty men from different grades are detailed from a *batiment central de la reserve* (station or receiving ship) for the care of each vessel; these men live on board the ship to which they are assigned, but take their meals on the *batiment central.* The commanding officer of this central vessel is charged with the care of the other vessels in reserve.

For the fiscal year 1896 the estimates are for ships in the different classes and categories as given in the appended table:

Type.	In commission.	Reserve.			Laid up.	Percentage in reserve.
		I category.	II category.	III category.		
Armored:						
Battleships	11	5	.....	6	.....	50
Coast-defense vessels	.....	7	10	4	1	100
Cruisers	3	3	.....	.....	.....	50
Total armored	14	15	10	10	1	75
Unarmored:						
Cruisers protected	4	7	8	.....	.....	79
Cruisers	12	1	1	9	6	59
Gun vessels	14	5	.....	.....	13	56
Torpedo vessels	8	5	5	.....	.....	55
Total unarmored	38	18	14	9	19	61
Summary	52	33	24	19	20	65
Torpedo boats	67	131	22	.....	.....	70

GERMANY.

All naval vessels not in full commission except yard tugs, etc., belong to the reserve and are classed in I, II, or III reserve, according to their readiness for service. The admiralty decides from reports of survey or other considerations into which class a vessel shall be put.

Ships in the I reserve must be fully ready for sea as far as the hull and equipment are concerned; engines must be in such condition that they can be made ready in forty-eight hours; coal for twenty-four hours' full-power steaming on board. The ships are manned with reduced crews, but, as far as possible, all leading positions are filled by the

men who would fill them on mobilization. Two or three ships of the I reserve are united in a reserve division, and their combined crews are permanently quartered on one of them—the *stammschiff* (parent ship)—which is fully officered. The commanding officer of the *stammschiff* is responsible for keeping all the vessels of his reserve division in the condition required by regulations, and must see that each of them is at all times in condition to be ready for battle in not more than five or six days.

Torpedo-boat reserve divisions are similarly formed of 8 torpedo boats and one division boat as *stammboot*; they must be so kept that at least 6 of them and the *stammboot* can be made ready for sea within ten hours after the receipt of orders to that effect.

Ships of the II and III reserve are in the hands of the navy-yard authorities. Those in the II reserve are structurally complete, and in such a state of equipment that they can be made ready for battle in less than three weeks. Those in the III reserve are in need of extensive alterations or repairs, or they are kept in this class because their speedy equipment is not thought desirable; they are kept in such condition as best answers the purpose for which they were assigned to the class.

On November 30, 1894, the ships in reserve were classified as follows:

Type.	In commission.	I reserve.	II and III reserves.	Percentage in reserve.
Armored:				
Battle ships	8	5	1	43
Coast-defense vessels	.....	18	1	100
Cruisers	.....	.....	.....	
Total armored	8	23	2	76
Unarmored:				
Cruisers, protected	2	2	.....	50
Cruisers	16	3	2	24
Gun vessels	6	1	.....	14
Torpedo vessels	.....	12	6	100
Total unarmored	24	18	8	52
Summary	32	41	10	61
Topedo boats	9	50	62	92.5

ITALY.

Ships not in full cruising commission are either in *riserva* or *disponibilita;* those in *riserva* are kept fully ready for immediate sea service, and the others are under repairs, fitting out, or kept in this class for other reasons.

For economical reasons Italy has for the last few years placed a very large percentage of her vessels in reserve, and in the estimates for the

fiscal year 1895–96 the number of ships in the different classes is estimated as shown below:

Type.	In commission.	Riserva.	Disponibilita.	Laid up.	Percentage in reserve.
Armored:					
Battle ships	3	3	5	.....	73
Coast-defense vessels	.....	.....	2	.....	100
Cruisers	.....	1	4	.....	100
Total armored	3	4	11	.....	83
Unarmored:					
Cruisers, protected	7	1	3	.....	36
Cruisers	5	2	7	.....	64
Gun vessels	3	1	2	5	73
Torpedo vessels	4	6	6	.....	75
Total unarmored	19	10	18	5	63
Summary	22	14	29	5	68.5
Torpedo boats	12	58	60	.....	98

An examination of the foregoing tables shows that of the total number of vessels in service in Great Britain, France, Germany, and Italy (573), the percentage in reserve, by classes, is as follows:

Type.	Percentage in reserve.
Armored:	
Battle ships	56
Coast-defense vessels	96
Cruisers	47
Total armored	66
Unarmored:	
Cruisers, protected	60
Cruisers	37
Gun vessels	61
Torpedo vessels	65
Total unarmored	52

Of the total number of vessels of these countries there are in reserve 56.5 per cent and in commission 43.5 per cent; in other words, less than half of the vessels comprising the naval strength of these countries is in commission. Of the armored strength 66 per cent is kept in reserve, which includes nearly all the coast-defense vessels.

A careful study of the systems thus briefly outlined, coupled with the fact that all our armored vessels except the two authorized at the last session of Congress are rapidly nearing completion, suggests that the time has come when, if it shall be decided by Congress to limit the personnel of our naval establishment in the interests of a wise economy within reasonable bounds, some plan of keeping the more expen-

sive of our naval vessels in reserve should be at least foreshadowed, that Congress may have before it a system which, if approved, shall serve as a guide in legislation.

The reasons for reserves obtaining abroad operate with full force here. Our battle ships and monitors are not intended for or well adapted to cruising in distant waters, though in case of necessity they can take to the high seas and make cruises of considerable length. Within the past twelve months the improved monitor *Monterey* was sent to Callao, where a ship was needed, and this vessel was selected partly from necessity and in part to demonstrate her fitness for such work, but it is not to be expected nor is it desirable that such a vessel should often be detailed for a cruise as long as this. Torpedo boats are likewise intended for harbor defense and should be kept on our own coasts. So also large cruisers like the *Minneapolis* and *Columbia* are not primarily designed to protect our commerce and show our flag in those countries where we have most frequent need of ships in times of general peace. These vessels are too deep in draft for most of the waters where we usually need ships in times of peace, and they are besides great consumers of coal.

Policing the seas is, as a rule, better and more economically done by cruisers of lighter draft carrying smaller crews, and by gunboats. Of these two classes of vessels we shall have an ample supply when the gunboats already authorized are completed. It is believed, therefore, that as a rule our battle ships, coast-defense vessels, and torpedo boats, after they have been, to use a familiar phrase, "broken in," should be kept largely in reserve. They should drill often and long enough to give officers and men exercise and skill in handling them, but when not so engaged they should be in reserve, kept in order by skeleton crews. It is estimated that sixty per cent of these classes of our ships may be profitably held in reserve when there is no unusual demand for their services. If the Congress in its wisdom shall approve of these suggestions it may legislate for further increase in the number of our battle ships and torpedo boats with the assurance that it will not soon be called upon for any further increase in the personnel of the Navy.

There has been a general tendency for some years abroad to localize officers and men and draw the personnel for particular ships from territory contiguous to the station of the several ships when at reserve stations.

The statement of the First Lord of the Admiralty has the following:

The arrangements for definitely appropriating petty officers and men of all rating to the three home ports have now been completed, and the result of the general order that each man may elect the port division to which he wished to belong will form a basis on which the future appropriation of new entries to the ports will be regulated. This will result eventually in each port having its fair proportion of the various ranks and ratings, the want of which has been much felt.

The advantages supposed in this extract to accrue to the English navy from a distribution of its reserves to different stations will naturally follow from such a division here.

Other obvious reasons for stationing our reserve ships at different points are that vessels in reserve at different points will be convenient and useful as receiving ships, will take the place of the dilapidated craft now furnished to the Naval Militia, and also serve to give these bodies the practice in the duties of seamen which they so much need and which it has so far been impossible to give them. Exactly where these stations should be located it is difficult under present conditions to determine, though the question must soon come up for solution. The natural distribution geographically would be a station each to New England, New York Harbor, the central Atlantic coast, the Gulf of Mexico, and the Pacific coast.

The Department proposes, unless otherwise directed by you or by Congress, to keep, as soon as circumstances may permit, a number of ships, chiefly monitors and coast-defense battle ships, as "ships of the first reserve." After a vessel in this category has been thoroughly overhauled and put in first-class condition in all respects, she will be taken to the station where she is to lie, and her officers and crew reduced to a skeleton organization composed of skilled artificers and other leading men to care for her battery, hull, and motive power. Such of her stores as may not be necessary for her maintenance in this condition, and such others as would deteriorate by remaining on board the ship, will be taken out and put in a special storehouse for such ship and in immediate proximity to her, there to be separately kept as a part of her outfit, so tallied and designated as to be in a state of readiness to be placed immediately on board. Such ship is not to be considered as in ordinary, but is to be treated in all respects as a ship in commission, and subject not to the authorities of the yard where stationed, but to the orders of the commander-in-chief of the squadron to which she is attached, or under the direct control of the Navy Department. In other words, the ship will be in commission with a largely reduced crew, and treated accordingly. The saving thus effected in men, coal, stores, and other charges is obvious, and at the same time the efficiency of the ship as a fighting machine will always be maintained. At least once in each year these vessels are to be given full crews and sent on short cruises to test their conditions and give the men and officers experience in handling them. Vessels undergoing a general overhauling at a navy-yard will be considered the second reserve. Vessels of the merchant marine liable to naval service under acts of Congress will be considered the auxiliary navy.

MARINES ON BOARD SHIP.

There has always been more or less objection on the part of some officers of the Navy to marines on board ship, but as marines have constituted a part of our naval establishment both on shore and at sea

from its infancy it may fairly be presumed that experience has, in the opinion of those who control, demonstrated the wisdom of maintaining this branch of the service. The Department has recently had occasion to consider carefully whether, under the conditions at present existing in the Navy, it was for the interests of the service to depart from the long-established custom and entirely dispense with all marines on battle ships.

The modern battle ship is largely a floating fort. It remains, as indeed all naval vessels under steam alone must for much the greater portion of the time, in port, where it exercises its crew in landing parties and infantry drills far more than was permissible when ships were for long periods at sea. These drills on shore and afloat, together with the handling and firing of great and rapid-fire guns, constitute also a much larger proportion of the actual experiences of the modern sailor than of the old-time tar, who was much of his time occupied in performing the duties peculiar to sailing vessels, and it is precisely in infantry and gun drills that the marine is or may be an expert. It would therefore seem that there is far more propriety in having the ship's crew composed in part of marines now than there could have been in the days of the sailing ship.

No reason appears why marines should not man a portion of the guns on board ship as well as handle small arms, nor is it perceived why their officers can not, subject to the orders of the captain, command gun crews and even gun divisions. The fact that marines are enlisted for five years, while sailors are only enlisted for three, is clearly an argument in favor of retaining the marines; and the having on board of two different organizations, if a proper spirit of rivalry between the two is encouraged, ought to be considered another advantage, especially in cases of insubordination. For these and other reasons the Department decided to put 60 marines and 2 marine officers on board the *Indiana*, and it will put marines on the other battle ships as they are severally commissioned.

NAVAL ACADEMY.

November 16, 1894, Commodore R. L. Phythian was relieved of the duties of superintendent by Capt. P. H. Cooper, under whom the usual routine of duties and exercises has been pursued with marked success throughout the year.

I take great pleasure in stating that during the past year the hazing so repeatedly condemned by the heads of this Department, by Congress, and by Presidents has entirely ceased. The cadets, actuated by a manly sense of honor and duty, have resolved among themselves no longer to countenance a practice that always and necessarily involves injustice and generally unfair combinations of the many against the few. I am sure that the whole country, feeling as it does always a lively interest in this national institution, will congratulate the young

men now at the Academy upon the step in advance they have taken and the example they have set.

No Latin or Greek is taught at the Naval Academy. The study of these languages experience has shown so educates one in the niceties of our own language as to supply in large part at least the want of a thorough study of English, but this does not seem to be true of the study of modern languages. A careful consideration of the curriculum in use at the Naval Academy convinced the Department that the study of our own language there should be more thorough. By my direction, therefore, the course in English has been enlarged. This, of course, could not be done except at the expense of other studies, but it will probably be admitted by all that absolute purity of style in English composition is for every officer a matter of prime importance. It is not enough that a large majority of graduates should be able to write the very purest of English. No cadet should be given a diploma who is deficient in this regard.

It might be well if, instead of the recommendations of the superintendent as to the ages of admission, hereinafter quoted and approved, Congress should reduce the age limit for admission to 14 and extend the course at the Academy to five years. If this suggestion be adopted the examination for admission need not be so rigid as it now is, and ample opportunity would still be allowed for all the studies that are essential, as well as for the more thorough study of English.

It is recommended that the limits of age for admission should be either from 14 to 16 or from 15 to 17, instead of from 16 to 20 as now. There are two reasons for this: First, there should not be as much as four years' difference between officers commissioned on the same day, all of whom are to retire at a given age; secondly, statistics gathered at the Academy in previous years show that boys who enter at an early age more frequently succeed in graduating than those of more advanced years, and the following extract from the report of the present superintendent strongly supports the same conclusion, showing as it does that out of 26 cadets dropped in the past year 6 only were under the mean age of entrance and 20 were above:

The following table will exhibit the number of naval cadets at the Academy on October 1, 1894, and the number remaining in June, 1895, when the results of the annual examination were determined:

Class.	Oct. 1, 1894.	June 7, 1895.	Loss.
			Per cent.
First, line division	32	29	12
First, engineer division	12	12	0
Second	47	39	17
Third	67	60	10
Fourth	84	59	30

No vacancies were created by death or dismissal, the larger percentage being due either to failure at required examinations or to anticipation of such failure. The number that actually failed and were permitted to resign was 26, divided among the classes as follows, with the range of ages:

Class.	Number.	Range of ages.			
		Yrs.	*Mos.*	*Yrs.*	*Mos.*
First	3	21	8 to	22	7
Second	4	19	8 to	22	7
Third	5	18	2 to	21	7
Fourth	14	17	1 to	20	10

The time of service at the Naval Academy ranged from six years eight months to five months—the former from the first class, the latter from the fourth class.

The following list exhibits the age at the time of entering the Academy of all those who failed at examinations during the year:

20 years	2	18 years 3 months	1
19 years 11 months	2	17 years 11 months	1
19 years 9 months	1	17 years 8 months	1
19 years 5 months	1	17 years 6 months	1
19 years 2 months	1	17 years 4 months	1
18 years 11 months	2	17 years	1
18 years 8 months	4	16 years 10 months	3
18 years 7 months	1	16 years 9 months	1
18 years 4 months	1		

The average of which is 18 years 5 months, the mean age between the limits allowed to candidates being 17 years 6 months. But six of the above entered the Academy at an age less than the mean, the youngest of these having been nearly two years beyond the minimum upon entrance.

This is one of the many arguments to prove that the limit of age permitted by law is too great, and it is to be earnestly hoped that the ages may be established between 15 and 17.

Of the 26 above mentioned, 9 had previously failed and were admitted under a new permit—nearly 35 per cent of total failures. Statistics could be given to show that a small percentage of those readmitted after having once failed succeed in meeting the requirements of the course, which shows the wisdom of the statute in force at the Military Academy by which the recommendation of the Academic Board is necessary for the readmission of a rejected candidate. It is recommended that similar legislation may be sought for the Naval Academy. Since 1882 there have been 90 cases of such failures, some having returned a second and third time.

There can be but one explanation of the statements, and that lies in the fact that the boys who succeed in passing the entrance examinations at an early age are brighter—as a rule, better material than those who enter later. I also beg leave to approve, subject to the foregoing suggestions, all the following recommendations made by the superintendent:

It is earnestly recommended that the act of August 5, 1882, be so far modified that the selections for the various corps in the Navy may be made at the conclusion of the four years' course at the Academy; that the surplus graduates may be at that time honorably discharged. There seems to be no argument in favor of the two years' course afloat in an educational sense, and many arguments against it. The examination must necessarily be in nature similar to that passed at the end of the

four years' course. The varying conditions of ship, station, and surroundings must be to the advantage of some and to the disadvantage of others. As a measure of justice to those who may become surplus graduates, they should be spared the two years' course afloat, which tends to unfit them for civil pursuits. As a measure of justice to the service, the graduates of the Academy should be given the stimulus of a commission or a warrant to remove them as early as possible from a state of probation.

Should it be deemed necessary to retain the six years' course the entire class upon leaving the Academy should be placed on board the same ship, subjected to systematic training, and under a uniform rule of discipline.

It is recommended that the legal requirement of age upon admission shall be from 15 to 17 years; that appointments shall be given one year in advance of admission; that admissions shall be only in the month of May; that the length of the course be four years, at the expiration of which those graduating and entering the service shall be commissioned in the lower grades of the line, Engineer and Marine Corps.

NAVAL WAR COLLEGE.

Under the able superintendency of Capt. H. C. Taylor, U. S. N., this institution has during each of the two past years made a distinctively forward step. It can no longer in any quarter be regarded as a post-graduate school to carry officers forward in the theoretical studies pursued in the Academy at Annapolis, but it now stands out clearly as an undeniably practical institution for the study of war as a science evolved from historical research and of war as an art applied to problems arising out of hypothetical and possible cases of attacks upon and defenses of our own country, its coasts, and cities.

That it was to be a school of war, and nothing but war, was not at first recognized by the public mind, either in or out of the Navy. This is not surprising when we reflect that three generations of naval seamen have seen little of fighting and nothing at all of those larger operations which are possible only when fleets are pitted against fleets in long series of maritime campaigns, as they were in the days of the French Revolution, when the English navy was at war with the allied fleets of France and Spain. Within the last half century the art of war upon land has been studied, and plans for campaigns have been matured in advance of occasions demanding such preparation to an extent never practiced in previous ages. That there has been during this period no great maritime war probably accounts for the fact that the importance of the study of the art of naval warfare has been disregarded or even denied, and that the world seems to have drifted into the habit of thinking that naval officers' duties should be limited to a police of the sea by single ships, or, on rare occasions, by two or three sailing together. But handling a single ship, keeping station in company with a few other ships, and accuracy in firing guns are by no means all the qualities needed by those who may be called upon to command fleets.

A knowledge of war methods is a prime necessity for officers who, though enjoying long periods of peace, do after all belong to a profession of arms. Nothing could more plainly substantiate this and illus-

trate the value of war studies than the eager acceptance which the work of the Naval War College is meeting from the great majority of our naval officers. It has been found necessary only to place before their minds such problems of war as would undoubtedly confront us in case of hostilities in order to excite in them the liveliest interest and stimulate them to most earnest endeavors to fit themselves before it is too late for those broader duties of their profession which a warlike situation may at any time call upon them to perform.

The unmistakable interest manifested by those who were engaged in the work during the past session at Newport has been very gratifying to the Department, and has enabled the staff of the War College to advance rapidly in the systematic study of the conduct of war, and to formulate methods of attacking this work which will undoubtedly conduce to a high degree of efficiency.

The groundwork of the system employed during the last few years at the Naval War College is, briefly, as follows:

First. A study of naval and military history, in order to obtain from it the essential elements governing warfare. In this study we discover that the elementary and basic principles of war remain unchanged throughout the many discoveries of new and formidable appliances, and that these principles require but slight modification of detail as a result of changes in weapons. Thus from history we deduce the principles of warfare which must govern us to-day.

This study is supplemented by a course of lectures upon various branches of warfare in addition to those devoted to international law. These are prepared and delivered by officers of great distinction in their specialties, who for the most part are stationed elsewhere and engaged in other duties.

Second. The solution of war problems. It is in this branch of the War College work that the greatest earnestness is manifested by the naval officers who attend college sessions. One principal problem is placed before the officers for their consideration during the four months' session, and it is under discussion by the permanent staff through the entire year. The conditions of this problem simulate with some exactness the situations of war with a foreign power of superior naval force who may undertake a demonstration against our coast. In the problem of each year a theater of operations is assumed which comprises a section of our coast as representing the enemy's principal objective. In 1894 this section included New York harbor, Long Island Sound and vicinity; in 1895 the scene of hostilities was placed upon the New England coast from Cape Cod to Eastport. These problems serve to illustrate the principles of strategy and tactics, and are examples of great value in familiarizing officers' minds with operations of war.

Following the example of Count von Moltke, who caused the German officers to prepare themselves in advance for actual war by the study

of hypothetical military situations, naval tactical problems have been instituted. The purpose of these problems is to cultivate quickness of discernment and rapidity in forming decisions, and thus to counteract the tendency to over deliberation which large plans of campaigns tend to produce.

Third. The elucidation of various disputed points of the naval and military science by material demonstrations. For this purpose war games or exercises are used, and results of much value have been obtained. These exercises are of three kinds—one for single ships opposed to each other, one for fleet battles, and a strategic game or exercise by means of which opposing campaigns are worked out.

By playing a number of these games under given conditions, and by varying the players on each side, the personal equation is eliminated and a balance remains in favor of one out of many proposed evolutions.

The exercises of steam launches which have made already a beginning will materially assist in this branch of the college work.

This successful development of the art of war by our Navy is especially gratifying now, when a respectable naval force of admirable ships will soon be at the disposal of the Government, and when the knowledge of properly disposing and combining them for war will be of the highest value. The Department for this reason regards the work of the Naval War College as especially deserving commendation.

NAVAL MILITIA.

The increasing interest in the Naval Militia movement in the lake and seaboard States gives such promise that the Department recommends that steps be now taken to establish this arm of the national defense on a definite footing.

The States making returns of petty officers and seamen and sharing in the annual allotment of the $25,000 appropriated for 1894–95 were as follows:

Massachusetts	409	Georgia	52
Rhode Island	100	California	313
Connecticut	71	Illinois	199
New York	387	Michigan	187
New Jersey	216	Maryland	174
Pennsylvania	167		
North Carolina	255	Total	2,695
South Carolina	165		

The two new States to make returns are New Jersey and Georgia. Louisiana and Ohio are also organizing battalions, but have not yet mustered in under State laws. A very energetic organization now exists in the interior on one of our great rivers.

It will be seen that there are thirteen States with regularly organized Naval Militia.

Active steps are being taken by the Department toward securing uniformity in the methods of organization and in the character of the duties performed, in order that the militia and the Regular Navy may cooperate effectively and helpfully in any scheme of national defense.

These organizations are made up more from the body of young men of aquatic tastes than from the seafaring class. Many of the militia are yacht and sailing-boat owners, actuated by the most commendable patriotism, and many more would be drawn into the work if boats of the navy cutter pattern were furnished, so as to make it still more apparent that the country expected and intended them to be of service to it in case of need.

Under authority conferred by law the Department has been able to loan a few unserviceable boats, but a boat of this character is hardly more valuable to the militia than to the Regular Navy. The Department is gratified to be able to state that the zeal and intelligent activities of the patriotic young men of this branch of the service are constantly pointing out new fields in which they can render efficient service. The information collected by the first battalion of the Naval Militia of New York during the past summer relative to the shore line of Long Island is of such value that the Department unhesitatingly indorses the proposition to engage this corps in the study of our entire coast line. Every battalion, with proper help and direction from the Department, can, as shown by the admirable work done on Long Island Sound last summer, acquire information as to its contiguous coast that would be invaluable in case of invasion.

Under the act empowering and authorizing the Department to loan unserviceable ships to the Naval Militia for purposes of instruction and drill, during the past year the *Dale* has been loaned to Maryland, the *Portsmouth* to New York, the *Wyandotte* to Connecticut, and the *Minnesota* to Massachusetts. Owing to the unseaworthy condition of the *Swatara* it was impossible for the State of California to utilize this vessel. An expenditure of about $6,000 would have been required to make her safe and habitable, and the Department did not consider this advisable, although in the large cities an old vessel is a great factor in the success of the Naval Militia organization, affording, as it does, a nucleus of and an incentive to enlistment. On the Pacific Coast no vessels are available, and on the Atlantic the supply is at present practically exhausted, so that it is impossible to meet the wants in this respect of the organizations.

By a joint resolution of Congress approved November 3, 1893, the model battle ship *Illinois*, at the World's Columbian Exposition, together with certain of her boats, equipments, and appurtenances, was transferred to the State of Illinois for the use of the Naval Militia of that State. On representation of the park commissioners of South Park, Chicago, where the model was located, this structure was in October of this year dismantled and removed, the boats, equipments, and appur-

tenances being preserved for the use of any militia which may organize in that State.

Only limited opportunities could be afforded the Naval Militia, during the past summer, to drill on board men-of-war, owing to the exigencies of the service, which demanded other uses for the ships of the North Atlantic Station.

The divisions in Georgia and North and South Carolina were given instruction for a few days each on board the monitor *Amphitrite*. The California divisions went to sea on the *Olympia*, and the Michigan battalion was instructed on board the *Michigan*. The *Raleigh* gave the naval brigade of Massachusetts an opportunity of two days' instruction and for one battalion one day's target practice at sea. The torpedo boat *Cushing* attended the encampment of the First Naval Battalion of New York at Shelter Island for three days. The Naval Militia organizations of New Jersey, Illinois, and Rhode Island did not have an annual tour. As no ships were available in New York, Pennsylvania, and Connecticut, the organizations in those States went into camp and engaged in boat and shore line reconnoissance work.

In the appendix will be found extracts from reports made by officers or boards of officers specially detailed for the purpose. Steps will be taken by the Department to send ships next summer to certain selected regions of the coast, where it is hoped to be able to concentrate several organizations in camp with a view to joint cooperation in military reconnoissance work in addition to instruction and drill on board ship.

The Naval Militia is slowly but surely, through natural evolutionary process, finding its best field as a factor in national defense and as an auxiliary to the Regular Navy. Its main element of strength lies primarily in a fine personnel, marked by great patriotism, zeal, enthusiasm, and a high degree of intelligence. They are composed of like material as our National Guard militia, and bear to the Navy much the same relations as do our much prized local military companies to the Army of the United States.

It would be hard in any country to find a finer body of physically and mentally well-developed young men than those in these organizations. It is no exaggeration to say that they are among the very best of our citizens. These organizations now encircle our coast and seem as enthusiastic in the Great Lakes region as on the seaboard. To make them efficient and of real service they must be kept in constant and stimulating touch with this Department. Their general importance is admitted; it remains to fix their exact status as a naval or military organization.

It is believed, however, that they will be of great value in aiding, as gunners, etc., to fight our ships of all classes that are in the Regular Navy, as well as manning those of our reserve and auxiliary navy. Whatever may be the especial fields to which it shall eventually appear the naval militia may be best adapted, it need not be feared but that

these young men will be ready for such service. Experience has abundantly shown in the past that the American holiday soldier, as he is sometimes called, is generally a fighting soldier in time of war.

The whole subject of the Naval Militia has been under the care of Assistant Secretary McAdoo, to whom the Department is much indebted for the zeal, fidelity, and ability with which he has discharged this, as he has all other duties given him in charge.

PUBLICATION OF NAVAL WAR RECORDS.

Under authority of acts of Congress approved July 31, 1894, and March 2, 1895, the Department has continued the publication of the naval war records during the past year. Since my last annual report the first volume of the records has been issued and distributed in accordance with the terms of the law as far as the list of addresses of recipients of Congressional and departmental quotas has been received. The second volume of the records is in the hands of the printer and will soon be issued, and it is hoped that two more volumes will be ready for the press during the present fiscal year.

The report of Lieut. Commander Richard Rush, U. S. N., superintendent of Naval War Records, which is herewith appended, contains some important recommendations concerning the reorganization and administration of his office. Lieutenant-Commander Rush proposes a board of publication, similar to that in the War Department, for the Army War Records—a measure which experience has shown possesses valuable advantages. The establishment of such a board tends to secure that uniformity and continuity of plan and design, without which no publication can attain any high degree of excellence, and I recommend its adoption by Congress for the Naval War Records. It is believed, also, that a comprehensive study of this publication would be of much professional value to the naval service, and for this reason I venture to ask that the quota allowed this Department for distribution may be increased sufficiently to permit the work to be supplied to all officers of the Navy.

It is the desire of the Department to continue this important publication as rapidly as possible. The reception by the public of the volume already issued has fully justified the prediction made in my last report that its appearance would excite much popular interest. The exploits of the American Navy have always appealed to the sympathies of our people, and the unprecedented demand for this work has been much larger than the limited edition heretofore authorized could supply.

NAVAL EXAMINING AND RETIRING BOARDS.

I have the honor to recommend that Congress be requested to make applicable to the Navy the act entitled "An act to provide for the examination of certain officers of the Army and to regulate promotions therein," approved October 1, 1890, and made applicable to the United

States Marine Corps July 28, 1892. This act embodies the essential features of the statutes on the subject relating to the Navy, but it avoids the duplication of work and the delay resulting from the procedure under the existing statutes relating to naval examining and retiring boards, which statutes were enacted at different times and without reference to each other.

At present officers of the Navy can only be promoted after examination as to their physical qualifications by medical examining boards, and as to their professional qualifications by boards of officers of the corps to which the candidate for promotion belongs. Where the board whose duty it is to pass upon the physical qualifications of officers reports adversely it becomes necessary to submit to another board the question of his retirement. This latter board, in order to ascertain the pay upon which the officer is to be retired, must consider and pass upon the identical questions which have already been submitted to the board that considered his physical qualification for promotion, and if the two boards arrive at different conclusions, which sometimes occurs, the officer can neither be promoted nor retired, and the promotion of other officers in the same corps is blocked.

By the act above referred to governing the promotion of officers of the Army and Marine Corps, the question of retirement is, in case of ascertained physical unfitness for promotion, considered by the same board that passes upon the other qualifications of the officer, so that there is thus under that system neither the delay, the duplication of work, nor the conflicting decisions of different boards now consequent upon the system that prevails in the Navy.

EXAMINATION FOR PROMOTION OF CERTAIN STAFF OFFICERS WHEN ADVANCED IN RELATIVE RANK.

I renew my previous recommendation that Congress be requested to amend the law providing for the examinations of officers for promotion, so as to include chief engineers, passed assistant surgeons, passed assistant paymasters, and passed assistant engineers, and that when these officers are advanced to the next higher relative rank, they be duly nominated by the President, confirmed by the Senate, and regularly commissioned. The statute providing for examinations uses the words, "No officer shall be promoted to a higher grade * * * until he has been examined * * *," and the Attorney-General has held that the law requiring examinations for promotions does not apply to officers advanced in relative rank only. There appears to be no reason why these officers should be excepted from such examination as is required of others.

DEPOSITIONS.

It is recommended that Congress authorize the taking of the depositions of witnesses residing beyond the limits of the State, Territory, or District in which any naval court may be ordered, if taken on rea-

sonable notice to the opposite party and duly authenticated, to be read in evidence before such court in cases not capital. Article 91 of the Articles of War contains a similar provision, applicable to the Army, and it appears that the reasons for such a law are even stronger in trials before naval courts.

Many of the witnesses before naval courts are persons in the naval service. Such persons have frequently no permanent place of duty, but are attached to vessels moving from place to place. The public service often requires that vessels to which witnesses are attached be sent far away before the trial can be had, and the witness must either be required to remain behind or return to the trial, either course being accompanied by inconvenience to the service, loss of time, and expense. To go to trial without the evidence of material witnesses is to deprive the court of the ability to justly determine the case before it. To delay the trial until the return of a witness is often to impose hardship upon the person accused.

The Department has, as far as possible, adopted the plan of keeping important witnesses within its reach, as the least expensive and most practicable way of meeting the difficulty. Frequently, however, this can not be done without serious detriment to the service, and cases arise in which it is not expedient to do so at all. Experience clearly demonstrates that the legislation recommended upon this subject is badly needed.

CIVILIAN WITNESSES.

The ends of justice are frequently defeated from the lack of power in naval courts to compel a civilian witness to appear and testify. The tendency of modern times is to bring persons in the naval service into closer touch with the outside world than ever before, and as a consequence the testimony of civilian witnesses is oftener needed in naval courts than formerly.

It sometimes happens that without such testimony the conviction of those guilty of serious offenses can not be had nor the innocence of persons unjustly accused established. There can be no good reason why courts authorized to hear and determine matters of imporatnce should longer be deprived of the ordinary compulsory process allowed civil tribunals for arriving at the truth of issues coming before them, and I renew my former recommendation, that Congress remedy by legislation this defect in the procedure before naval courts.

ACQUISITION OF PATENT RIGHTS.

Inventions useful to the naval service are frequently patented by officers of the navy. Officers have peculiar opportunities in the line of their duty for discovering the defects of naval appliances and devising remedies for the same. When they have been especially assigned to the duty of making experiments for the purpose of sug-

gesting improvements in some particular direction, if the facilities for conducting the experiments have been furnished by the Department, and the expenses, including the procuring of patents, have been borne by the Department, the improvements or devices are the property of the United States.

When, however, an officer is not acting under authority of the Department, and the invention does not concern a matter the officer was especially assigned the duty of investigating, and when the expenses of making experiments and procuring the letters patent are borne by the officer, it has been held that the patent is the property of the officer and is valid as against the Government itself. In order to use these devices the United States must obtain the consent of the patentee and pay him such price for the use of the same as he may demand, and it has frequently been found difficult to adjust the rights of officers as against the Government in these cases.

The inventive genius of officers should not be suppressed, nor should they be unjustly deprived of the fruits of their labor, but, on the other hand, there ought to be no extraordinary pecuniary stimulus to turn to their own advantage knowledge acquired at the expense of the Government and tending to promote the interests of the service in which they are employed. Such a stimulus exists where the Government must do without improvements essential to its naval power or pay to persons whom it has educated and furnished the opportunities for developing such improvements such prices as they may insist upon for the same.

The British Government has recently found it expedient to prescribe the terms under which its navy shall acquire the use of inventions patented by persons in its naval service, and the following provisions appear to me to be particularly equitable and just: "The invention may be used by or for Her Majesty's service, and that the terms of payment, if any, shall be decided by the Admiralty," and "in settling terms, either for assignment or use, regard will be had by the Admiralty to any facilities in originating, working out, and perfecting the invention which the inventor may have enjoyed by reason of his official position."

As naval officers receive their education at the expense of the Government, and their opportunities to make improvements in naval appliances result largely from such education and the facilities afforded them by the duties they perform under the Government, I have the honor to recommend that Congress be asked to enact legislation providing that the United States may at any time acquire the right to use devices covered by letters patent issued to officers of the Navy, whether retained in their ownership or assigned to others, upon such terms and at such rate of compensation as may, by the Secretary of the Navy. be deemed just and equitable.

BIENNIAL EXAMINATION OF OFFICIAL BONDS.

It is now provided by law that officers required to take and approve official bonds shall cause the same to be examined at least once every two years, for the purpose of ascertaining the sufficiency of sureties. This is an important provision, but one with which the Department has not found it easy to comply. In the Army such examinations of bonds are made by inspectors-general, but there are no officials under the jurisdiction of the Navy adapted to this work, especially where the sureties offered are at points in the interior.

The Department during last summer requested that these examinations be made by United States district attorneys in the districts where the sureties reside, but under a decision of the honorable the Attorney-General it has been held that this is not a duty which these officials can be required to perform. I therefore request that Congress be asked either to assign this duty by statute to United States district attorneys, or to appropriate funds whereby the Department can employ attorneys to make these examinations.

PUNISHMENT FOR ATTEMPTING TO DEFRAUD THE GOVERNMENT.

Section 5440 of the Revised Statutes is as follows:

> If two or more persons conspire either to commit any offense against the United States, or to defraud the United States in any manner or for any purpose, and one or more of such parties do any act to effect the object of the conspiracy, all the parties to such conspiracy shall be liable to a penalty of not less than one thousand dollars and not more than ten thousand dollars, and to imprisonment for not more than two years.

This is the only general statute of the United States inflicting punishment for an attempt to defraud the Government, and it appears to be defective in that under its provision two or more persons must conspire together before any offense can be committed.

This matter has been brought to the attention of the Navy Department by reason of an attempt by one person, without any proven accomplices, to defraud the Government by the use of a facsimile of the stamp of an inspecting officer. The prosecution instituted at the instance of this Department in this case failed, as it is understood, solely because the Government was unable to show that a foreman who committed the fraud had an accomplice. It is recommended that Congress be asked to enact a law making any person, whether conspiring with others or not, punishable for attempting to defraud the Government.

CERTIFIED CHECKS.

I renew my previous recommendation that section 3719 of the Revised Statutes be amended so as to allow the Department to accept certified checks covering the entire amount of contracts in lieu of a guaranty and bond required by that section. In small transactions

business firms frequently decline to bid on naval supplies because they do not consider the amount involved justifies them in furnishing the bonds required by law, and thus the Government fails to profit by the low prices which larger dealers can afford to offer.

SITE OF DRY DOCK AT ALGIERS, LA.

In my last annual report I submitted the particulars regarding the pending purchase at Algiers, La., of two tracts of land known as the Olivier and Trepagnier estates, to be used by the Government in the establishment of a dry dock at that place. I have the honor to report that this purchase has been concluded by the payment, in pursuance of the decree of the court, to the parties named in that decree, of the sum of $37,000 for the Olivier property and $7,750 for the Trepagnier property, and that the title to the lands received in each case met the approval of the Department of Justice.

PURCHASE OF ADDITIONAL LAND AT KEY WEST, FLA.

Under the provision of the act approved March 2, 1895, appropriating $20,000 for the purchase of an additional lot for the storage of coal at the naval station, Key West, Fla., I have the honor to report that a lot fronting on the waters of the harbor of Key West and adjoining the naval station was purchased from William Curry and wife, August 16, 1895. By this purchase the property of the naval station is extended to Green street, in Key West, and additional facilities for the storage of coal, long needed, have been acquired.

LIVE OAK TIMBER RESERVATIONS.

Congress, by special act approved March 2, 1895, authorized the Secretary of the Navy to certify the whole or such portion or portions of the several tracts of land in the States of Alabama and Mississippi heretofore set apart and reserved for naval purposes, as are no longer required for the purpose for which they were reserved, or for any purpose connected with the naval service.

I have the honor to report that in pursuance of this act the several tracts of land so held in reserve in the States of Alabama and Mississippi were, March 14, 1895, certified to the Secretary of the Interior for restoration to the body of the public domain, the Department being satisfied that it no longer had any use for the retention of these reservations.

NAVAL OBSERVATORY LANDS.

By act of Congress approved August 1, 1894, it was provided that no street, avenue, or public thoroughfare in the neighborhood of the buildings erected upon the United States Naval Observatory grounds, Georgetown Heights, District of Columbia, shall extend within the area of a circle described with a radius of 1,000 feet from the center of

the clock room of the Observatory. This law further authorized the Secretary of the Navy to grant the right of way for the extension of Massachusetts avenue through the limits of the Observatory grounds exterior to said circle, to sell certain portions of the Observatory lands lying without the limits of the circle, and to purchase, by condemnation or otherwise, certain lands of private parties lying within the circle.

I have the honor to report that in pursuance of the provisions of the above law the Department, under date of October 22, 1894, granted the right of way for the extension of Massachusetts avenue through the Observatory grounds; that it also appointed a board of appraisers to determine and fix a price at which the tracts of land lying outside the limits of the circle should be sold, and in order that full opportunity to purchase said lands might be afforded, the larger tract was subdivided into lots of convenient size, which land was offered for sale, after public advertisement, purchasers being allowed at their option to bid upon any one or more of the subdivisions, or upon the tracts in entirety.

Under the provisions of this law these lands could not be sold at less than their appraised prices. One of the tracts, containing 14.45 acres, was appraised at $141,454.57, a fraction less than 22½ cents per square foot. The other tract, containing 1.218 acres, was appraised at $18,569.63.

Aside from one proposal, which related to a subdivision only of one of the tracts, and could not therefore be accepted, no offers to purchase the tracts in question at or above the appraised prices were received. No sale was consummated, and the Department has not, therefore, been able to purchase the lands necessary to complete the Government's ownership of the Observatory circle.

The Department, having waited for months for other bids, by its order under date of October 26, 1895, reconvened the board of appraisers to consider whether or not it would be advantageous to the interests of the Government to reduce the price at which the lands had been appraised; and if so, to what extent. This question is now under consideration by the board.

NAVAL HOSPITAL, NEW YORK.

There accrued to the naval hospital fund the sum of $95,000 under the act of July 20, 1890, authorizing the sale of the New York Hospital property to the city of Brooklyn. July 26, 1894, Congress authorized the use of $69,000 of this sum for repairs and improvements at the New York Hospital, and the construction of a retaining wall to properly protect the Government property. Plans and specifications relating to all the proposed changes were prepared and advertisements for bids to do the work made.

The bids received were all in excess of the amount authorized for this purpose, the highest bid being $84,000 in excess and the lowest bid

$49,430. No contract was therefore let at that time, but changes were made in the specifications and new advertisements for bids were invited for all the work authorized, except the new ward, estimated at $25,000, and specified in the act to be built of the same material as the main hospital building. This material is Sing Sing marble, which is very expensive, and the ward could not be erected from that material for the amount specified, $25,000. The lowest bid under the amended specifications was, excluding the proposed ward, $39,500, from J. N. Brosnan, of New York, and the contract was accordingly let to him.

It is therefore recommended that authority be granted by Congress to substitute brick for marble. This will enable the ward to be built within the appropriation of $69,000 made by Congress.

PAVING RECOMMENDED.

I respectfully call attention to the following extract from the report of superintendent of the State, War, and Navy Departments building:

The roadway on the east and south sides of the building is unpaved, and the prevailing southerly and easterly winds in the dry season blow the fine dirt from this roadway, not only on the east and south sides, but into the windows, and complaints have reached this office that the records are being damaged. A northeast wind brings rain, which has so beaten the yellow dirt into the projections and even the flat surfaces on the east side that its beauty is greatly marred. The driving easterly winds and rain have so washed the joints of the projecting stones that they will require pointing in the near future. We have washed the north and part of the east front with water from our pressure pumps; the north side was readily cleaned, but the east side was not much improved.

During the past dry season I called the attention of the honorable Commissioners for the District of Columbia to the conditions set forth in the above extracts, and requested that this roadway be paved. It was ascertained that the Commissioners had no authority or money to make this needed improvement. I therefore request that Congress be asked to make the necessary appropriation.

TRANSFER OF COAST SURVEY.

I renew my recommendation of last year that the work of the Coast and Geodetic Survey be transferred, a part to the Hydrographic Office of the Navy Department and the rest to the Geological Survey of the Interior Department, and invite attention to the following from my annual report of last year:

After a careful personal investigation of this subject, begun years ago, I am convinced that the Coast Survey work proper now remaining to be done along our coasts can be carried on quite as efficiently and much more economically by the Navy Department than under the Coast and Geodetic Survey.

The work of the Coast Survey, for which that organization is peculiarly fitted, is the topography of the shore lines and immediate adjacent lands. This work has been done with great care and accuracy, but it is practically all completed. Only very small patches of the topographic work along the lines of the Gulf of Mexico

and the shores of California remain undone. That this work has long been considered by the Coast Survey officials to be of little immediate value is apparent from the fact that it has been left undone for many years. It is believed that if a very small proportion of the annual expenditures of the Survey for the past ten years, say one-tenth, had been devoted to the purpose, this unfinished topography would all have been completed years ago. Should the work of the Coast Survey be transferred to the Navy it is safe to say that all the topographic work along our shores, excluding Alaska, would be completed promptly, as the Navy is deeply interested in having complete charts of our coasts.

The topography of the coast lines once completed is enduring. Changes caused by advancing or receding shore lines are relatively few, unimportant, and especially easy to be noted. The work that is less enduring, though it is all important and must therefore be done over and over again, is the hydrographic work, the soundings by which the changes made in the bottom of the sea by the shifting sands and drifting sediment shall always be made known to the sailor. This hydrographic work, which is to constitute in future the greatest portion of the outdoor labor of the Survey, is now and has for years been done by and under the superintendence of officers of the Navy detailed to work under the Coast Survey. Why the Survey should remain a separate and independent Bureau when its principal task has been accomplished is not easy to see. The Coast Survey continues, of course, to make and correct maps and charts from data furnished it, but work exactly similar is being done, and well done, in the Hydrographic Office of the Navy Department. A transfer of all this work to this Department would unify, cheapen, and expedite the making and correcting of the charts, which must always remain essential to navigation and commerce.

In recommending this transfer I am fully in accord with the Secretary of the Treasury, as is evidenced by the following extract from a communication from him to the chairman of the House Naval Committee in regard to this matter:

"That the work performed by the Survey, or at least the greater part of it, is of great value to the Government is not questioned; but I am unable to see the necessity for the maintenance of a separate and distinct bureau to carry it on when it can be done as efficiently and more economically by the Hydrographic Office in the Department of the Navy and the Geological Survey in the Department of the Interior."

The portion of the work of the Coast Survey referred to in this extract as proper to be transferred to the Geological Survey is its geodetic work proper. This lies almost entirely in the interior, and has therefore no connection whatever with the survey of the coast.

ESTIMATES AND APPROPRIATIONS.

Comparative exhibit of estimates and appropriations, 1896 and 1897.

Detailed objects of expenditure and appropriation.	Estimates, 1896.	Appropriation, 1896, current year.	Estimates, 1897.
General establishment:			
Pay of the Navy	$7,472,848.00	$7,649,329.00	$7,850,873.00
Pay, miscellaneous	240,000.00	240,000.00	260,000.00
Contingent, Navy	7,000.00	7,000.00	7,000.00
Bureau of Yards and Docks:			
Ordinary expenses	805,912.37	805,912.37	821,379.04
Public works	1,044,803.00	804,075.00	1,295,190.78
Bureau of Navigation:			
Ordinary expenses	307,250.00	157,000.00	289,750.00
Naval Academy	200,118.45	199,618.45	231,031.45

Comparative exhibit of estimates and appropriations, 1896 and 1897—Continued.

Detailed objects of expenditure and appropriation.	Estimates, 1896.	Appropriation, 1896, current year.	Estimates, 1897.
Bureau of Equipment:			
Ordinary expenses	$1,309,025.00	$1,309,625.00	$1,343,772.00
Naval Observatory	92,000.00	22,000.00	14,300.00
Bureau of Ordnance	1,626,882.50	569,824.00	1,767,190.00
Bureau of Construction and Repair	1,019,972.50	974,972.50	2,040,472.50
Bureau of Steam Engineering	1,162,900.00	887,900.00	1,209,400.00
Bureau of Supplies and Accounts	1,287,581.09	1,287,581.09	1,447,532.03
Bureau of Medicine and Surgery	126,800.00	126,800.00	137,200.00
Marine Corps:			
Pay department	700,820.65	695,645.65	690,471.40
Quartermaster's department	288,791.40	269,221.00	267,221.00
Total running expenses	17,692,704.96	16,006,504.06	19,672,783.20
Increase of the Navy:			
Bureau of Equipment	142,500.00	125,000.00	287,500.00
Bureau of Ordnance	5,237,670.00	4,837,670.00	3,955,204.00
Construction and Machinery	7,879,222.00	8,364,851.30	5,395,679.00
Total increase of the Navy	13,259,392.00	13,327,521.30	9,638,383.00
Grand total	30,952,096.96	29,334,025.36	29,311,166.20

The foregoing statement of appropriations for the current fiscal year does not include the appropriation for the remission of time penalties on account of delays in the construction of the *Yorktown*, *Baltimore*, *Philadelphia*, and *Newark*, $40,300, nor that on account of the purchase of the steamers *De Soto* and *Bienville*, in 1861, balance unpaid $41,701.95, both of which appropriations were embraced in the naval appropriation act of March 2, 1895. These two latter items are properly claims against the Government paid by act of Congress, and constitute no part of the current expenditures of the naval establishment. Including these items, the total appropriations made by the act amounted to $29,416,077.31.

Appropriations, expenditures, and balances, fiscal year ending June 30, 1895, and balances undrawn October 31, 1895.

	Appropriations for fiscal year ending June 30, 1895, exclusive of public works.	Amount drawn in fiscal year ending June 30, 1895.	Balances June 30, 1895.	Balances undrawn Oct. 31, 1895.
Pay of the Navy	$7,480,500.00	$6,239,956.07	$1,240,543.93	$612,730.74
Pay, miscellaneous	240,000.00	239,841.56	158.44	816.87
Contingent, Navy	7,000.00	3,832.79	3,167.21	.....
Bureau of Yards and Docks:				
Maintenance	250,000.00	224,689.20	25,310.80	5,324.85
Repairs and preservation, navy-yards	300,000.00	258,950.16	41,049.84	12,996.57
Civil establishment	61,494.54	59,116.07	2,378.47	2,727.99
Contingent	15,000.00	9,161.69	5,838.31	1,905.36
Naval Home, Philadelphia, Pa	80,465.00	68,654.07	12,810.93	2,471.12
Bureau of Equipment:				
Equipment of vessels	1,090,000.00	831,967.27	258,032.73	115,501.67
Civil establishment	19,025.00	17,428.23	1,596.77	1,623.17

Appropriations, expenditures, and balances, fiscal year ending June 30, 1895, etc.—Cont'd.

	Appropriations for fiscal year ending June 30, 1895, exclusive of public works.	Amount drawn in fiscal year ending June 30, 1895.	Balances June 30, 1895.	Balances undrawn Oct. 31, 1895.
Bureau of Equipment—Continued.				
Contingent	$12,000.00	$9,242.94	$2,757.06	$226.79
Naval Observatory	23,956.00	12,[illegible]48.90	11,707.10	10,051.10
Bureau of Navigation:				
Pay, Naval Academy	104,301.45	104,277.30	24.15	790.57
Repairs, Naval Academy	21,000.00	18,645.22	2,354.78	917.46
Heating and lighting, Naval Academy	17,000.00	16,968.84	31.16	41.36
Special course, Naval Academy	3,000.00	2,105.40	894.60	316.20
Contingent, Naval Academy	41,800.00	30,596.00	11,204.00	3,623.77
Naval War College and Torpedo School	8,000.00	7,290.03	709.97	58.28
Naval training station	30,000.00	29,829.89	170.11	19.60
Gunnery exercises	6,000.00	3,470.81	2,529.19	1,420.80
Transportation, recruiting, and contingent	45,000.00	38,911.11	6,088.89	173.13
Ocean and lake surveys	14,000.00	12,881.89	1,118.11	193.13
Outfits for naval apprentices	30,000.00	5,938.36	24,061.64	15,100.64
Bureau of ordnance:				
Ordnance and Ordnance stores	200,000.00	178,360.16	21,639.84	10,668.48
Repairs	30,000.00	28,448.64	1,551.36	426.78
Civil establishment	26,824.00	25,528.78	1,295.22	1,295.24
Contingent	8,000.00	7,466.58	533.42	256.51
Torpedo station	60,000.00	56,725.42	3,274.58	361.28
Bureau of Construction and Repair:				
Construction and repair	900,000.00	870,109.29	29,890.71	6,356.60
Civil establishment	19,972.50	16,589.73	2,382.77	2,382.77
Bureau of Steam Engineering:				
Steam machinery	675,000.00	629,944.25	45,055.75	278.08
Civil establishment	11,900.00	11,756.32	143.68	153.54
Contingent	1,000.00	527.75	472.25	40.10
Bureau of Supplies and Accounts:				
Provisions	1,175,000.00	974,335.91	200,664.09	73,837.05
Civil establishment	67,532.03	62,788.07	4,743.96	4,690.49
Contingent	45,000.00	38,110.82	6,889.18	9.48
Bureau of Medicine and Surgery:				
Medical department	60,000.00	59,881.11	118.89	10.81
Repairs	20,000.00	7,403.48	12,596.52	2,746.07
Contingent	25,000.00	22,944.30	2,055.70	15.18
Naval Hospital fund	20,000.00	20,000.00	.....	.....
Marine Corps:				
Pay	700,820.65	640,740.15	60,080.50	37,584.76
Clothing	80,000.00	78,497.27	1,502.73	472.16
Provisions	80,000.00	77,722.55	2,277.45	527.26
Fuel	19,500.00	15,939.94	3,560.06	2,458.40
Repairs of barracks	20,000.00	19,295.07	704.93	126.77
Military stores	13,286.50	13,247.06	39.44	51.08
Transportation and recruiting	15,000.00	7,035.75	7,964.25	6,535.26
Forage	2,800.00	2,795.04	4.96	5.96
Hire of quarters	6,624.00	6,268.27	355.73	156.13
Contingent	30,000.00	29,910.71	89.29	21.43
Total	14,212,801.67	12,148,376.22	2,064,425.45	940,498.33

As will be seen from the foregoing exhibit—

The appropriations for current expenses for the fiscal year ending June 30, 1895, exclusive of public works, amounted to	$14,212,801.67
Drawn by requisition to June 30, 1895	12,148,376.22
Balance undrawn July 1, 1895	2,064,425.45
Drawn by requisition from July 1, 1895, to October 31, 1895	1,123,927.12
Balance undrawn November 1, 1895	940,498.33
Add balances in the hands of disbursing officers at same date	1,798.10
Available balance November 1, 1895	942,286.43

INCREASE OF THE NAVY.

I do not deem it necessary now to repeat the arguments so often made by this Department, and which still continue to apply with full force, in favor of a still further increase of the Navy. A reference to previous reports will show the reasons upon which the recommendations then made were based, and that Congress has not yet authorized all the ships then deemed necessary. An inspection of the tables herein given, showing the relative strength of navies will furnish, it is believed, all the argument now needed for the continuation of the building programme heretofore indicated by the action of Congress. We are not in want of ordinary unarmored cruisers or of gunboats, but we are lamentably deficient in torpedo boats, and we certainly need more battle ships. An inspection of the building programmes of other nations will demonstrate that the lessons taught at Yalu and Wei Hai Wei have tended to confirm the belief of naval experts throughout the world in the efficacy of these two classes of vessels.

I respectfully recommend the construction of 2 battle ships and at least 12 torpedo boats. The gratifying progress made by our manufacturers of steel and our shipbuilders and the competition among them has enabled the Department, during the past two years, to contract for gunboats and torpedo boats at a very large reduction from former prices. The prices per ton for the gunboats *Machias* and *Castine*, contracted for in April, 1890, was $302.86, the average price of the 3 gunboats contracted for in January, 1894, and of the 6 others just let out to contract is $222.34 per ton, a saving of $80.52 per ton, or 26 per cent of the price of the ships. The price of the *Ericsson*, contracted for in October, 1891, was $945.83 per ton. The average price of the 6 torpedo boats contracted for in 1895 is $766.58 per ton, a reduction of $179.25 per ton, or of about 20 per cent in the price of the boats. These prices compare very favorably with the prices for similar work done abroad.

The Department also indulges the hope that the bids for the two battle ships, the construction of which was authorized by the last Congress, and of their armor, will be considerably lower than the prices at which the battle ships now building and their armor were let.

HILARY A. HERBERT,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES, OFFICE OF JUDGE-ADVOCATE-GENERAL.			
Chief clerk, in lieu of one clerk of class 4 (act June 8, 1881, R. S., pp. 21, 27, 164, secs. 167, 1; act Mar. 2, 1895, P. E. L., p. 791, sec. 1)	$1,800		
One clerk of class 4 (same acts)	1,800		
One clerk of class 3 (same acts)	1,600		
Three clerks of class 1 (same acts)	3,600		
One clerk (same acts)	1,000		
One laborer (same acts)	660		
		$10,460	$10,460
NOTE.—One of the clerks of class 4, now provided for, has been actually performing the duties of chief clerk for sometime past. His designation as such will promote the efficient organization of the office without involving any increase in his compensation or any change whatever in the amounts appropriated.			
OFFICE OF THE SECRETARY.			
Office of Naval Records of the Rebellion.			
Salaries:			
Two clerks of class 4 (act of Mar. 2, 1895)	$3,600		
One clerk of class 3 (act of Mar. 2, 1895)	1,600		
One clerk of class 2 (act of Mar. 2, 1895)	1,400		
Two clerks of class 1 (act of Mar. 2, 1895)	2,400		
Two clerks at $1,000 each (act of Mar. 2, 1895)	2,000		
Two copyists at $900 each (act of Mar. 2, 1895)	1,800		
Four copyists at $720 each (act of Mar. 2, 1895)	2,880		
		15,680	15,680
Necessary traveling expenses for collection of records (act of Mar. 2, 1895)	600	600	600
Publication of the Official Naval Records of the Rebellion: For continuing the publication of the Official Records of the Union and Confederate Navies in the War of the Rebellion, in accordance with the plan approved by the Secretary of the Navy under the act of Congress approved July 31, 1894, and for the purpose of making such maps and illustrations as relate to the work, and for increasing the whole edition (from the beginning) from 10,000 to 11,000 copies of each volume, said increase to be in addition to the present quota of the Navy Department, for the purpose of supplying such officers of the Navy (who have not already received the work) as the Secretary of the Navy may direct, and for the compensation of such temporary expert services in connection with the preparation, publication, and distribution of said records as may be deemed necessary by the Secretary of the Navy, such experts to be selected and appointed by the Secretary of the Navy, from time to time, as the necessity therefor arises, the sum of fifty thousand dollars: *Provided*, That hereafter the preparation of said records shall be conducted, under the Secretary of the Navy, by a board of three persons, one of whom shall be an officer of the Navy, to be selected by the Secretary of the Navy, and two civilian experts, to be appointed by the Secretary of the Navy, the compensation of said civilian experts to be fixed by the Secretary of the Navy and to be paid from this appropriation (act of March 2, 1895)	.....	50,000	22,000
Library of the Navy Department.			
Salaries:			
One clerk, at $1,000 (act of Mar. 2, 1895)	1,000		
One assistant messenger, at $720 (act of Mar. 2, 1895)	720		
One laborer, at $660 (act of Mar. 2, 1895)	660	2,380	2,380
For professional books and periodicals for the library (act of Mar. 2, 1895)	500	500	500

s of appropriations required for the service of the fiscal year ending June 30, 1897, by the Navy Department.

ed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
RIES, OFFICE OF SECRETARY OF THE NAVY.			
(act Mar. 2, 1895)	$8,000		
Secretary (same act)	4,500		
k (same act)	2,500		
ecretary (same act)	2,250		
g clerk (same act)	2,250		
of class 4, in charge of files and records (same			
	1,800		
of class 4 (same act)	1,800		
ks of class 3 (same act)	4,800		
grapher (same act)	1,600		
grapher (same act)	1,400		
of class 2 (same act)	1,400		
s of class 1 (same act)	4,800		
(same act)	1,000		
aph operator (same act)	1,000		
nter (same act)	900		
engers, at $840 each (same act)	1,680		
istant messengers, at $720 each (same act)	2,160		
enger boys, at $420 each (same act)	840		
nger boy (same act)	360		
er (same act)	660		
of class 1 for Inspection Board (same act)	1,200		
er for Inspection Board (same act)	660		
of class 1 for Examining and Retiring Board			
t)	1,200	$48,760	$48,760
NTINGENT EXPENSES, NAVY DEPARTMENT.			
, furniture, newspapers, plans, drawings, draw-			
erials, horses, carriages, freight, expressage,			
, and other absolutely necessary expenses of the			
epartment and its various bureaus and offices			
r. 2, 1895)		11,000	11,000
PRINTING AND BINDING.			
and binding for the Navy Department, including			
or the Hydrographic Office, to be executed under			
ction of the Public Printer (act Mar. 2, 1895)		70,000	70,000
PAY OF THE NAVY.			
ficers on sea duty; officers on shore and other			
fficers on waiting orders; officers on the retired			
arks to commandants of yards and stations;			
to paymasters at yards and stations; general			
spers; receiving ships and other vessels; extra			
nen reenlisting under honorable discharge; in-			
n deposits by men; pay of petty officers, seamen,			
m, and boys, including men in the engineer's			
d for the Coast Survey service and Fish Com-			
, 9,250 men and 750 boys, at the pay prescribed			
(R. S., p. 246, sec. 1367; p. 248, sect. 1386–8; p. 265,			
5; p. 269, sec. 1569; p. 269, sec. 1573; p. 272, sec.			
ts May 12, 1879, vol. 21, p. 3, sec. 1; Aug. 5, 1882,			
pp. 285–7, sec. 1; Mar. 3, 1883, vol. 22, pp. 472–3, sec.			
3, 1885, vol. 23, p. 340, sec. 1; Mar. 2, 1889, vol. 25,			

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Navy Department—Continued.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
PAY OF THE NAVY—continued.				
p. 809, sec. 1; July 19, 1892, vol. 27, p. 236, sec. 1; Mar. 3, 1893, vol. 27, p. 715, sec. 1; July 26, 1894, vol. 28, pp. 123–37, sec. 1; Mar. 2, 1895)		.....	$7,850,873.00	$7,649,329.00
NOTE.—The foregoing estimate is made up as follows:				
Pay of 1,462 officers on the active list	$3,355,500			
Pay of 332 naval cadets under instruction	166,000			
Pay of 428 officers on the retired list	954,289			
Pay of 97 clerks	125,000			
Pay of 10,000 petty officers, seamen, and other enlisted men, including apprentices in cruising vessels, training ships, and at the training stations*	3,098,895			
Extra pay of officers and seamen reenlisting under honorable discharge	141,189			
To pay interest on deposits by men, act Feb. 9, 1889	10,000			
Total	7,850,873			
PAY, MISCELLANEOUS.				
Commissions and interest; transportation of funds; exchange; mileage to officers while traveling under orders in the United States, and for actual personal expenses of officers while traveling abroad under orders, and for traveling expenses of apothecaries, yeomen, and civilian employees, and for actual and necessary traveling expenses of naval cadets while proceeding from their homes to the Naval Academy for examination and appointment as cadets; for rent and furniture of buildings and offices not in navy-yards; expenses of courts-martial, prisoners and prisons, and courts of inquiry, boards of investigation, examining boards, with clerks' and witnesses' fees, and traveling expenses and costs; stationery and recording; expenses of purchasing paymasters' offices of the various cities, including clerks, furniture, fuel, stationery, and incidental expenses; newspapers and advertising; foreign postage; telegraphing, foreign and domestic; telephones; copying; care of library, including purchase of books, photographs, prints, manuscripts, and periodicals; ferriage, tolls, and express fees; costs of suits; commissions, warrants, diplomas, and discharges; relief of vessels in distress; canal tolls and pilotage; recovery of valuables from shipwrecks; quarantine expenses; reports; professional investigation; cost of special instruction, at home or abroad, in maintenance of students and attachés and information from abroad, and the collection and classification thereof, and other necessary incidental expenses. (Act July 26, 1894, vol. 28, p. 124, sec. 1; Mar. 2, 1895)		.....	260,000	240,000
CONTINGENT, NAVY.				
All emergencies and extraordinary expenses arising at home or abroad, but impossible to be anticipated or classified, exclusive of personal services in the Navy Department or any of its subordinate bureaus or offices at Washington, D. C. (Same acts)		.....	7,000	7,000

*Increase in estimate due to the 1,000 additional force allowed by act of March 2, 1895.

RETIRED LIST.

Estimate of the amount required to pay retired officers of the United States Navy for the year ending June 30, 1897.

Grade.	Number.	Pay per annum.	Total.
Rear-admirals	2	$6,000	$12,000
Do	35	4,500	157,500
Commodores	8	3,750	30,000
Captains	5	3,375	16,875
Do	2	2,625	5,250
Do	1	2,250	2,250
Do	1	1,950	1,950
Commanders	12	2,625	31,500
Do	1	2,100	2,100
Do	1	1,400	1,400
Do	1	1,150	1,150
Lieutenant-commanders	10	2,250	22,500
Do	9	2,100	18,900
Do	1	1,950	1,950
Do	1	1,500	1,500
Do	1	1,350	1,350
Do	2	1,100	2,200
Do	1	700	700
Lieutenants	24	1,950	46,800
Do	10	1,800	18,000
Do	2	1,200	2,400
Do	5	900	4,500
Lieutenants (junior grade)	8	1,500	12,000
Do	1	1,350	1,350
Do	1	900	900
Ensigns	10	1,050	10,500
Do	1	900	900
Do	1	500	500
Do	1	300	300
Medical directors	3	3,750	11,250
Do	10	3,300	33,000
Medical inspectors	9	3,300	29,700
Surgeons	4	2,625	10,500
Do	8	2,400	19,200
Do	2	2,100	4,200
Passed assistant surgeons	7	1,650	11,550
Do	1	1,100	1,100
Assistant surgeons	3	1,425	4,275
Do	2	1,275	2,550
Do	1	850	850
Pay directors	5	3,300	16,500
Pay inspectors	5	$3,300	$16,500
Do	1	1,500	1,500
Paymasters	5	3,150	15,750
Do	2	2,450	4 900
Do	1	1,400	1,400
Passed assistant paymasters	1	1,500	1,500
Assistant paymasters	1	1,425	1,425
Do	1	600	600
Chief engineers	1	3,750	3,750
Do	23	3,300	75,900
Do	5	3,150	15,750
Do	9	2,625	23,625
Do	1	2,400	2,400
Passed assistant engineers	4	2,025	8,100
Do	3	1,838	5,514
Do	20	1,650	33,300
Do	2	1,500	3,000
Do	3	1,275	3,825
Do	1	1,100	1,100
Do	1	850	850
Do	1	400	400
Assistant engineers	20	1,425	28,500
Do	4	1,275	5,100
Do	1	950	950
Do	2	850	1,700
Do	1	600	600
Do	1	500	500
Chaplains	4	2,100	8,400
Professors of mathematics	4	2,625	10,500
Naval constructors	4	3,150	12,600
Civil engineers	1	3,250	3,250
Boatswains	17	1,350	22,950
Do	1	600	600
Gunners	28	1,350	37,800
Carpenters	17	1,350	22,950
Sailmakers	13	1,350	17,550
Do	1	500	500
Mates	5	900	4,500
Total	428	.....	954,289

Number of clerks, and their pay, allowed to commandants of yards and stations, to paymasters of yards, to general storekeepers, and on receiving ships and cruising vessels.

Number and designation.	Where employed.	Pay per annum.
One first clerk to commandant	Navy-yard, Portsmouth, N. H	$1,500
One second clerk to commandant	do	1,200
One clerk to paymaster of yard	do	1,400
One principal clerk to general storekeeper	do	1,300
One first clerk to commandant	Navy-yard, Boston, Mass	1,500
One clerk to paymaster of yard	do	1,600
One principal clerk to general storekeeper	do	1,600
One clerk to paymaster of receiving ship	do	1,600
One first clerk to commandant	Navy-yard, New York, N. Y	1,500
One second clerk to commandant	do	1,200
One clerk to paymaster of yard	do	1,600
One principal clerk to general storekeeper	do	1,600
One clerk to paymaster of receiving ship	do	1,600
One first clerk to commandant	Navy-yard, League Island, Philadelphia, Pa.	1,500
One second clerk to commandant	do	1,200
One clerk to paymaster of yard	do	1,600
One principal clerk to general storekeeper	do	1,600
One clerk to paymaster of receiving ship	do	1,600
One first clerk to commandant	Navy-yard, Norfolk, Va	1,500
One second clerk to commandant	do	1,200
One clerk to paymaster of yard	do	1,400
One principal clerk to general storekeeper	do	1,300
One clerk to paymaster of receiving ship	do	1,300
One first clerk to commandant	Navy-yard, Washington, D. C	1,500
Two second clerks to commandant, at $1,200 each	do	2,400
One clerk to paymaster of yard	do	1,600
One principal clerk to general storekeeper	do	1,600
One second clerk to commandant	Navy-yard, Pensacola, Fla	1,200
One clerk to paymaster of yard	do	1,400
One first clerk to commandant	Navy-yard, Mare Island, Cal	1,300
One second clerk to commandant	do	1,200
One clerk to paymaster of yard	do	1,800
One principal clerk to general storekeeper	do	1,300
One clerk to paymaster of receiving ship	do	1,800
One clerk to commandant	Naval station, New London, Conn	1,500
One clerk to paymaster of station	do	1,300
One clerk to commandant	Naval station, Newport, R. I	1,500
Do	Training station, Newport, R. I	1,500
One clerk to paymaster of receiving ship	do	1,300
One clerk to general storekeeper	do	1,300
One clerk to paymaster of station	Torpedo Station, Newport, R. I	1,300
One clerk to president	War College, Newport, R. I	1,500
One clerk to commandant	Naval station, Key West, Fla	1,500
One clerk to paymaster of station	do	1,300
One clerk to commandant	Naval Academy, Annapolis, Md	1,500
One clerk to cadet storekeeper	do	1,300
One clerk to general storekeeper	do	1,300
One clerk to commissary	do	1,300
One clerk to paymaster of Academy	do	1,300
One clerk to paymaster of ships	do	1,300
One clerk to commanding officer	Naval Home, Philadelphia, Pa	1,500
One clerk to paymaster	do	1,300
One clerk to general inspector, pay corps	do	1,300
One clerk to commandant	Naval station, Puget Sound, Wash	1,500
One clerk to paymaster of station	do	1,300
One clerk to commandant	Naval station, Port Royal, S. C	1,500
One clerk to paymaster	do	1,300
Do	Naval Proving Grounds	1,300
Eight clerks to paymasters of flagships, at $1,100 each.		8,800
Three clerks to paymasters of first-rate ships, at $1,300 each.		3,900
Thirteen clerks to paymasters of second-rate ships, at $1,100 each.		14,300
Fourteen clerks to paymasters of third-rate ships, at $1,000 each.		14,000
Total		125,000

RECAPITULATION.

Total pay for 1,462 officers on the active list	$3,355,500
Total pay for 332 cadets	166,000
Total pay for 428 officers on retired list	954,289
Total pay for 97 clerks	125,000
Total	4,600,789

Estimate of the amount required to pay the officers of the United States Navy for the fiscal year ending June 30, 1897.

ACTIVE LIST.

No.	Grade.	Sea duty.			Other duty.		
		No.	Pay per annum.	Total.	No.	Pay per annum.	Total.
5	Rear-admirals	3	$6,000	$18,000	2	$5,000	$10,000
1	Rear-admiral (chief of bureau)				1	6,000	6,000
1	Commodore (chief of bureau)				1	5,000	5,000
9	Commodores	2	5,000	10,000	7	4,000	28,000
1	Captain (chief of bureau)				1	5,000	5,000
44	Captains	20	4,500	90,000	24	3,500	84,000
1	Commander (chief of bureau)				1	5,000	5,000
1	Commander (assistant chief of bureau)				1	3,500	3,500
83	Commanders	19	3,500	66,500	64	3,000	192,000
31	Lieutenant-commanders (after 4 years)	13	3,000	39,000	18	2,600	46,800
43	Lieutenant-commanders (first 5 years)	24	2,800	67,200	19	2,400	45,600
1	Lieutenant (Judge-Advocate-General)				1	3,500	3,500
170	Lieutenants (after 5 years)	95	2,600	247,000	75	2,200	165,000
80	Lieutenants (first 5 years)	48	2,400	115,200	32	2,000	64,000
75	Lieutenants, junior grade (first 5 years)	45	1,800	81,000	30	1,500	45,000
1	Lieutenant (not in line of promotion)				1	2,000	2,000
181	Ensigns (after 5 years)	139	1,400	194,600	42	1,200	50,400
60	Naval cadets (undergraduates)	56	950	53,200	4	500	2,000
15	Medical directors (after 20 years from date of commission as surgeons)				15	4,000	60,000
4	Medical inspectors (fleet surgeons)	4	4,400	17,600			
10	Medical inspectors	2	4,200	8,400	8	4,000	32,000
1	Medical inspector (chief of bureau)				1	5,000	5,000
2	Surgeons (fourth 5 years)	1	3,700	3,700	1	3,600	3,600
10	Surgeons (third 5 years)	5	3,500	17,500	5	3,200	16,000
15	Surgeons (second 5 years)	5	3,200	16,000	10	2,800	28,000
23	Surgeons (first 5 years)	13	2,800	36,400	10	2,400	24,000
1	Surgeon (not in line of promotion)				1	2,400	2,400
24	Passed assistant surgeons (after 5 years)	5	2,800	14,000	19	2,000	38,000
32	Passed assistant surgeons (first 5 years)	23	2,000	46,000	9	1,800	16,200
21	Assistant surgeons (first 5 years)	17	1,700	28,900	4	1,400	5,600
1	Pay director (chief of bureau)				1	5,000	5,000
12	Pay directors (after 20 years from date of commission as paymasters)				12	4,000	48,000
2	Pay inspectors (fleet paymasters)	2	4,400	8,800			
11	Pay inspectors				11	4,000	44,000
1	Paymaster (fleet)	1	4,400	4,400			
3	Paymasters (after 20 years)	1	4,200	4,200	2	4,000	8,000
9	Paymasters (fourth 5 years)	6	3,700	22,200	3	3,600	10,800
5	Paymasters (third 5 years)	3	3,500	10,500	2	3,200	6,400
5	Paymasters (second 5 years)	1	3,200	3,200	4	2,800	11,200
17	Paymasters (first 5 years)	11	2,800	30,800	6	2,400	14,400
1	Passed assistant paymaster (after 5 years)	1	2,200	2,200			
19	Passed assistant paymasters (first 5 years)	11	2,000	22,000	8	1,800	14,400
9	Assistant paymasters (first 5 years)	9	1,700	15,300			
1	Chief engineer (chief of bureau)				1	5,000	5,000
5	Chief engineers (fleet engineers)	5	4,400	22,000			
15	Chief engineers (after 20 years)	2	4,200	8,400	13	4,000	52,000
2	Chief engineers (fourth 5 years)	1	3,700	3,700	1	3,600	3,600
4	Chief engineers (third 5 years)	2	3,500	7,000	2	3,200	6,400
12	Chief engineers (second 5 years)	6	3,200	19,200	6	2,800	16,800
31	Chief engineers (first 5 years)	17	2,800	47,600	14	2,400	33,600
10	Passed assistant engineers (third 5 years)	3	2,700	8,100	7	2,350	16,450
14	Passed assistant engineers (second 5 years)	8	2,450	19,600	6	2,250	13,500
42	Passed assistant engineers (first 5 years)	26	2,000	52,000	16	1,800	28,800
41	Assistant engineers (after 5 years)	24	1,900	45,600	17	1,600	27,200
25	Cadets (engineer division)	25	950	23,750			
6	Chaplains (first 5 years)	4	2,500	10,000	2	2,000	4,000
18	Chaplains (after 5 years)	10	2,800	28,000	8	2,300	18,400
12	Professors of mathematics (after 15 years)				12	3,500	42,000
1	Chief constructor (chief of bureau)				1	5,000	5,000
3	Naval constructors (fourth 5 years)				3	4,000	12,000
4	Naval constructors (second 5 years)				4	3,400	13,600
6	Naval constructors (first 5 years)				6	3,200	19,200
18	Assistant naval constructors (after 4 years)				18	2,200	39,600
5	Civil engineers (after 15 years)				5	3,500	17,500
4	Civil engineers (third 5 years)				4	3,000	12,000
1	Civil engineer (second 5 years)				1	2,700	2,700
2	Civil engineers (first 5 years)				2	2,400	4,800
21	Boatswains (after 12 years from date of appointment)	10	1,800	18,000	11	1,600	17,600
3	Boatswains (third 3 years)	3	1,400	4,200			
4	Boatswains (second 3 years)	2	1,300	2,600	2	1,000	2,000
4	Boatswains (first 3 years)	2	1,200	2,400	2	900	1,800
20	Carpenters (after 12 years from date of appointment)	14	1,800	25,200	16	1,600	25,600

Estimate of the amount required to pay the officers of the United States Navy, etc.—Cont'd.

ACTIVE LIST—Continued.

No.	Grade.	Sea duty.			Other duty.		
		No.	Pay per annum.	Total.	No.	Pay per annum.	Total.
2	Carpenters (fourth 3 years)	1	$1,600	$1,600	1	$1,300	$1,300
1	Carpenter (third 3 years)	1	1,400	1,400			
7	Carpenters (first 3 years)	3	1,200	3,600	4	900	3,600
17	Sailmakers (after 12 years from date of appointment)	5	1,800	9,000	12	1,600	19,200
17	Gunners (after 12 years from date of appointment)	5	1,800	9,000	12	1,600	19,200
3	Gunners (third 3 years)	2	1,400	2,800	1	1,300	1,300
7	Gunners (second 3 years)	4	1,300	5,200	3	1,000	3,000
11	Gunners (first 3 years)	7	1,200	8,400	4	900	3,600
22	Mates	18	1,200	21,600	4	900	3,600
1,462	Total	785		1,703,750	677		1,651,750

Total pay for 1,462 officers on the active list $3,355,500
Pay for 332 naval cadets (under instruction at the Naval Academy, at $500 per annum) 166,000

Aggregate 3,521,500

Schedule of bids and statement of contracts awarded and entered into for furnishing ice and washing towels for the Navy Department and its bureaus and offices during the fiscal year ending June 30, 1896, received under the Department's advertisement of April 13, 1895.

ICE.

Independent Ice Company, Washington, D. C.* ..... per 100 pounds .. $0.16¼
Hygienic Ice Company, Washington D. C ..... do .... .20

WASHING TOWELS.

Mrs. M. A. Weaver, Washington, D. C.* ..... per 100 .. $0.59
James W. Colton, Washington, D. C ..... do .... .70
Miss Emma Springs, Washington, D. C ..... do 1.00

Statement of proposal for the purchase of waste paper of the Navy Department and its several bureaus and offices during the fiscal year ending June 30, 1896, received under the Department's advertisement of April 22, 1895 (per 100 pounds).

J. Dreifus & Co., Alexandria, Va.* $0.25

Statement of proposal for the manufacture of 10,000 Lee straight-pull rifles, received under the Department's advertisement of August 30, 1895.

Name and address of bidder.	Price per rifle.	Deliveries.	
		To begin.	To be completed.
Winchester Repeating Arms Co., New Haven, Conn.*	$17.60	10 months	100 days.

Statement of proposals for steel forgings for 4 and 5 inch guns, received under the Department's advertisement of April 3, 1895.

Name and address of bidder.	Ten sets 4-inch.		Twenty sets 5-inch.	
	Price per pound.	Time limit.	Price per pound.	Time limit.
	Cents.	*Days.*	*Cents.*	*Days.*
Bethlehem Iron Co., South Bethlehem Pa.*	28	115	28	115
Midvale Steel Co., Philadelphia, Pa.	29	149	29	178

* Contract awarded.

Statement of proposals for gun forgings for 4 and 5 inch guns, received under the Department's advertisement of September 9, 1895.

Name and address of bidder.	Twenty-seven sets 4-inch.		Thirteen sets 5-inch.	
	Price per pound.	Time limit.	Price per pound.	Time limit.
	Cents.	*Days.*	*Cents.*	*Days.*
Bethlehem Iron Co., South Bethlehem, Pa. *	29	210	29	150
Midvale Steel Co., Philadelphia, Pa	28½	175	30	175

* Contract awarded.

Statement of proposals for the construction of torpedo boats 3, 4, and 5, received under the Department's advertisement of December 6, 1894.

Name and address of bidder.	For one vessel.	For two vessels (each).	For three vessels (each).
Class 1.			
Bath Iron Works, Bath, Me			$142,000
John H. Dialogue & Son, Camden, N. J	$139,000	$137,000	136,000
Columbian Iron Works and Dry Dock Co., Baltimore, Md	107,000	103,000	* 97,500
Hugh Ramsay, Perth Amboy, N. J			126,000
Union Iron Works, San Francisco, Cal	135,000	129,000	120,000
Fulton Engineering and Shipbuilding Works, San Francisco, Cal	148,000	145,000	
Iowa Iron Works, Dubuque, Iowa			137,000
Class 2.			
Hugh Ramsay, Perth Amboy, N. J			146,000
Do			115,900
Union Iron Works, San Francisco, Cal	125,000	120,000	116,000
Do	243,000		
Herreshoff Manufacturing Co., Bristol, R. I			113,850
Do			138,000
Do	113,850	138,000	
Do	138,000	113,850	

* Contract awarded.

Statement of proposals for the construction of torpedo boats 6, 7, and 8, received under the Department's advertisement of July 1, 1895.

Name and address of bidder.	For one vessel.	For two vessels (each).	For three vessels (each).
Class 1.			
Union Iron Works, San Francisco, Cal	$175,000	$173,000	$172,000
Wolf & Zwicker Iron Works, Portland, Oreg	168,700		
Moran Bros. Co., Seattle, Wash	* 163,350		
Class 2.			
Herreshoff Manufacturing Co., Bristol, R. I	144,000	* 144,000	144,000

* Contract awarded.

Statement of proposals for the construction of four light-draft composite gunboats of about 1,000 tons displacement each, having single-screw engines and full sail power (gunboats Nos. 10, 11, 12, and 13) and two light-draft composite gunboats of about 1,000 tons displacement each, having twin-screw engines and carrying steadying sails only (gunboats Nos. 14 and 15), received under the Department's advertisement of July 23, 1895.

GUNBOATS NOS. 10, 11, 12, and 13.

Name and address of bidder.	Class 1, Department's plans.							
	For one vessel.				For two vessels (each).			
	According to specifications.	Deduct for steam windlass.	Deduct for steam steerer.	Deduct for electric plant.	According to specifications.	Deduct for steam windlass.	Deduct for steam steerer.	Deduct for electric plant.
Union Iron Works, San Francisco, Cal	$246,000	$3,000	$3,200	$10,000	$240,000	$3,000	$3,200	$10,000
Detroit Dry Dock Co., Detroit, Mich	215,750	2,250	1,000	2,500	*429,000	2,250	1,000	2,250
Bath Iron Works, Bath, Me	.....	.....	.....	.....	†229,400	.....	.....	.....
John H. Dialogue and John H. Dialogue, jr., Camden, N. J	.....	.....	.....	.....	‡460,000	.....	.....	.....

Name and address of bidder.	Class 2, bidder's plans, for one vessel.			
	According to specifications.	Deduct for steam windlass.	Deduct for steam steerer.	Deduct for electric plant.
Lewis Nixon, Elizabeth, N. J	§$238,200	$3,200	$3,000	§$10,500

* For both vessels.
† Contract awarded for gunboats Nos. 11 and 12.
‡ Contract awarded for gunboat No. 13.
§ Contract awarded for gunboat No. 10.

GUNBOATS NOS. 14 AND 15.

Name and address of bidder.	Class 1, Department's plans.							
	For one vessel.				For two vessels (each).			
	According to specifications.	Add for electric plant.	Deduct for steam windlass.	Deduct for steam steerer.	According to specifications.	Add for electric plant.	Deduct for steam windlass.	Deduct for steam steerer.
Union Iron Works, San Francisco, Cal	$215,000	$10,000	$3,000	$3,200	*$209,000	*$10,000	$3,000	$3,200
Detroit Dry Dock Co., Detroit, Mich	213,750	2,500	2,250	1,000	†425,000	2,500	2,250	1,000
John H. Dialogue and John H. Dialogue, jr., Camden, N. J	.....	.....	.....	.....	†460,000	.....	.....	.....

* Contract awarded for gunboats Nos. 14 and 15.
† For both vessels.

Schedule of bids and statement of contracts awarded and entered into to furnish stationery for the Navy Department and its several bureaus and offices during the fiscal year ending June 30, 1896.

Bidder.	Items.										
	1	2	3	4	5	6	7	8	9	10	11
Easton & Rupp, Washington, D. C	*$1.44	*$1.98	*$1.72	$1.74 *1.20	$2.00 *1.48	$3.76	*$3.60	$1.90	*$0.75	$0.82	*$0.60
Wm. H. Teepe, Washington, D. C	1.45	2.02	1.75	1.75 1.40	2.02 1.68	*3.75	3.61	*1.68	.....	.....	.....
I. Clark Seamans, New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	.75	*.80	.....
R. Carter Ballantyne, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	2.24 1.82	.....	.....	.....

Bidder.	Items.								
	12	13	14	15	16	17	18	19	20
Easton & Rupp, Washington, D. C	*$1.00	$2.00	$3.00	$4.45	*$6.40	*$1.25	*$1.58	*$1.48	*$1.88
Wm. H. Teepe, Washington, D. C	.....	2.00	2.85	4.28	.....	1.33	1.59	.....	.....
J. C. Addison, Washington, D. C	.....	.....	2.40	3.60	.....	.....	.....	.....	.....
F. R. Walker & Son, New York, N. Y	.....	*1.59	2.35	3.55	.....	.....	.....	.....	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	1.35	1.70
I. Clark Seamans, New York, N. Y	.....	.....	.....	.....	.....	1.26	1.50	1.20	1.41
R. Carter Ballantyne, Washington, D. C	.....	2.00	*2.25	*3.35	.....	1.50 1.05	1.80 1.50	1.75	2.50
W. A. Copenhaver, Washington, D. C	.....	.....	.....	.....	.....	1.12	1.40	1.00	1.20

Bidder.	Items.									
	21	22	23	24	25	26	27	28	29	30
Easton & Rupp, Washington, D. C	$2.20	$1.86	$2.35	$6.00 5.00	$6.00 5.00	*$11.75 5.00	$6.00 5.00	$6.00 5.00	$6.00 5.00	$0.95
J. C. Addison, Washington, D. C	.....	.....	.....	4.50	4.50	4.50	4.50	4.50	4.50	.....
Columbia Rubber Works Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	.....	.....	*.45
Geo. R. Seiffert, Philadelphia, Pa	.....	1.35	1.70	3.48	3.48	3.48	3.48	3.48	3.48	.....
I. Clark Seamans, New York, N. Y	*1.83	*1.68	*2.04	*5.00	*5.00	5.00	*5.00	*5.00	*5.00	.....
L. H. Rogers, New York, N. Y	.....	.....	.....	4.20	4.20	4.20	4.20	4.20	4.20	.....
Herman Baumgarten, Washington, D. C	.....	.....	.....	3.74	3.74	3.74	3.74	3.74	3.74	.....
R. Carter Ballantyne, Washington, D. C	3.00	2.30	3.15	.....	.....	.....	.....	.....	.....	1.03
W. A. Copenhaver, Washington, D. C	.....	1.20	1.60	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	31	32	33	34	35	36	37	38	39	40
Easton & Rupp, Washington, D. C	$0.76	$0.86	$0.38	$0.42	$0.48	$0.62	$0.34	$0.09	$0.10	$0.11
Mackall Bros. & Flemer, Washington, D. C	.70	.80	.35	.44	.53	.62	.30	.08 9/16 *.06	.10 4/16 .07 4/16	.11 2/16 *.08 3/16
Columbia Rubber Works Co., New York, N. Y	*.43¼	.82	*.21¼	*.28¼	*.32½	*.38	*.15½	.04 1/16	.05	.05 4/16
Rhodes Lockwood, Boston, Mass	.57	*.64½	.28½	.35½	.42¾	.498	.23	.071	.087	.093
R. Carter Ballantyne, Washington, D. C	.73	.82	.37	.46	.55	.64	.31½	.09¼	.10½	.11½

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	41	42	43	44	45	46	47	48	49	50
Easton & Rupp, Washington, D. C	$0.13	$0.13	$0.23	$0.24	$0.26	$0.38	$0.40	$0.40	$0.40	$0.40
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.55	.55	.55	.55
Mackall Bros. & Flemer, Washington, D. C	.11 9/16	.13 4/16	.25 8/16	.28 8/16	.32 7/16	.35 7/16	.....	.....	.....	.....
Columbia Rubber Works Co., New York, N. Y	*.08 9/16 .05 7/16	*.10 .06 8/16	*.11	*.14 1/16	*.16¾	*.19½	.....	.....	.....	.....
Rhodes Lockwood, Boston, Mass	.099	.114	.1995	.228	.2565	.285	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	.....	.....	.30	*.30	.30	.30
Geo. F. Muth & Co., Washington, D. C	.....	.....	.....	.....	.....	.....	.40	.40	.40	.40
R. Carter Ballantyne, Washington, D. C	.12¼	.13¾	.26	.29½	.33	.36¼	*.25 .45	.....	.45 *.25	.45 *.25

Bidder.	Items.									
	51	52	53	54	55	56	57	58	59	60
Easton & Rupp, Washington, D. C	$0.40	$0.60	*$0.24 .28	.....	$0.60	$0.60	$0.60	$0.60	.....	$0.48
R. Carter Ballantyne, Washington, D. C	.45 *.25	.26	.....	.....	1.73 .75	1.73 .75	.75	.75	.....	.....
Wm. H. Teepe, Washington, D. C	.55	.90	.40	.....	.75	.75	.75	.75	.....	.50
F. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.72	.72	.72	.72	.....	.....
C. S. Braisted, New York, N. Y	.30	*.25	.29	*.37	*.50	*.50	*.50	*.50	*.36	*.32
Geo. F. Muth & Co., Washington, D. C	.40	.....	.....	.....	.....	1.75	1.75	.....	.....	.60

Bidder.	Items.									
	61	62	63	64	65	66	67	68	69	70
Easton & Rupp, Washington, D. C	$0.48	$0.48	$0.48	$0.48	*$0.16 .24	$0.50	$0.70 .55	$0.43	*$0.85	$0.71
R. Carter Ballantyne, Washington, D. C	.50	.57	.50	.....	.17 .17	.....	.16	*.41	1.08	*.70
Wm. H. Teepe, Washington, D. C	.50	.50	.50	.50	.20	.50	.75	.50	1.35	.75
C. S. Braisted, New York, N. Y	*.25	*.25	*.25	*.25	.19	*.30	*.37 .14 .17	.....	.....	.....
Geo. F. Muth & Co., Washington, D. C	.48	.48	.48	.48	.....	.....	.28 8/16	.....	.....	.....

Bidder.	Items.									
	71	72	73	74	75	76	77	78	79	80
Easton & Rupp, Washington, D. C	$0.40	*$0.65	$0.76	$0.76	$0.76	$0.76	$0.76	$0.56	*$0.68	*$0.68
R. Carter Ballantyne, Washington, D. C	*.38	.66	.76	.76	.76	.76	.76	*.54	.68	.68
Wm. H. Teepe, Washington, D. C	.40	.65	*.68	*.68	*.68	*.68	*.68	.65	.75	.75

Bidder.	Items.									
	81	82	83	84	85	86	87	88	89	90
Easton & Rupp, Washington, D. C	$0.68	*$0.37	*$0.32	$0.40	$0.37	*$0.48	$0.40	$1.08	$0.72	$0.72
R. Carter Ballantyne, Washington, D. C	.68	.38	.33	*.39	*.36	.49	*.40	*.95	.76	.76
Wm. H. Teepe, Washington, D. C	*.65	.45	.40	.45	.42	.57	.57	1.00	*.63	*.63

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	91	92	93	94	95	96	97	98	99	100
Easton & Rupp, Washington, D. C	$0.45	*$0.33	$0.35	$0.42	*$0.50	$1.56	*$0.36	*$0.50	*$0.48	*$0.26
R. Carter Ballantyne, Washington, D. C	.....	.42	.61	*.38	.59¼	.11¾	.42	.56	.48¾	.30
Wm. H. Teepe, Washington, D. C	.45	.36	.33	.41	.60	1.58	.39	.55	.51	.30
W. A. Copenhaver, Washington, D. C	.....	.33½	*.30	.38	.53½	*1.31	.37	.51	.48	.27
C. S. Braisted, New York, N. Y	*.27	.....	.....	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	101	102	103	104	105	106	107	108	109	110
Easton & Rupp, Washington, D. C	$0.40	*$0.30	*$1.25	$0.95	$3.25	*$0.27	$1.40	$9.60	*$4.40	$0.01¼
R. Carter Ballantyne, Washington, D. C	*.28	.31	.10½	1.22	3.34	.30	.....	*7.75 10.50	.....	*.01⅛
Wm. H. Teepe, Washington, D. C	.70	.33	1.55	.99	*3.00	.30	2.25	9.40	.....	.03
J. C. Addison, Washington, D. C	.....	.....	.....	.....	.....	.....	1.50	A 10.00 B 8.00 C 9.00 D 7.95	.....	.....
F. A. Schmidt, Washington, D. C	.....	.....	.....	.....	2.00	.....	.....	.....	.....	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	1.25	.....	.....	.....
W. A. Copenhaver, Washington, D. C	.51	.30	1.26	*.94	.....	.27	.....	8.50	.....	.....
I. Clark Seamans, New York, N. Y	.....	.....	.....	.....	.....	.....	1.50	.....	.....	.....
L. H. Rogers, New York, N. Y	.....	.....	.....	.....	.....	.....	*1.25	.....	.....	.....
Herman Baumgarten, Washington, D. C	.....	.....	.....	.....	.....	.....	1.70	.....	.....	.....

Bidder.	Items.									
	111	112	113	114	115	116	117	118	119	120
Easton & Rupp, Washington, D. C	$0.05½	$0.10	$1.25	$2.75	$0.25	$1.00	$0.30	$0.31	$0.37	$0.45
R. Carter Ballantyne, Washington, D. C	.....	.....	.90	.....	.14	.....	.28	.31 *.26	.34 *.31	*.31
Wm. H. Teepe, Washington, D. C	.05¼	.12	2.00	2.50	.20	1.00	.33	.37	.43	.60
Standard Oil Co., Washington, D. C	.....	.....	*.32	.....	.....	.....	.....	.....	.....	.....
J. C. Addison, Washington, D. C	.....	.....	.75	.....	.10	.....	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.08 .05½ *.04	.....	.....	.....	.....	.....	.....	.....	.....	.....
Columbia Rubber Co., New York, N. Y	.....	.....	.....	.....	.....	*.59	.....	.....	.....	.....
Herz Hoffa, Washington, D. C	.....	.....	1.25	1.15	.....	.....	.....	.....	.....	.....
J. H. Chesley & Co., Washington, D. C	.....	.....	.....	1.18 *.48	.12½	.....	.....	.....	.....	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.96	1.19	.11	.....	.....	.....	.....	.....
W. A. Copenhaver, Washington, D. C	.06	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.05¾	*0.8⅞	.78	.....	*.06½	.....	.....	.....	.....	.....
I. Clark Seamans, New York, N. Y	.....	.....	1.50	2.10	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	.....	.....	*.26	.30	.32	.....
Geo. F. Muth & Co., Washington, D. C	.....	.....	.....	.....	.08	.....	.....	.....	.....	.....
Herman Baumgarten, Washington, D. C	.....	.....	.96	.....	.....	.....	.....	.....	.....	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	121	122	123	124	125	126	127	128	129	130
Easton & Rupp, Washington, D. C	$0.33	*$1.25	$0.35	$0.02	$0.08	$0.09	$0.05	$0.07	$0.15	$0.02½
R. Carter Ballantyne, Washington, D. C	*.31			.03 .03	.07½ .07	.08 .07	.04	*.06½	*.14½	.02
Wm. H. Teepe, Washington, D. C			*.35							
Columbia Rubber Works Co., New York, N. Y							.02 9/16			.01 1/16
F. A. Schmidt, Washington, D. C					.15	.12				
C. S. Braisted, New York, N. Y				*.01⅞	*.04½	*.05½	*.02½			*.01⅞
Geo. F. Muth & Co., Washington, D. C				.03	.07	.07				

Bidder.	Items.									
	131	132	133	134	135	136	137	138	139	140
Easton & Rupp, Washington, D. C	*$0.02½	*$0.06	*$0.13	*$1.90	$0.11	$0.15	$0.03½	$0.03¾	$0.03	$0.09
R. Carter Ballantyne, Washington, D. C			.09½	2.00 1.90	.11	.15	*.03½	*.02¾	*4.02½	*.07⅛
Wm. H. Teepe, Washington, D. C				2.50						.15
F. A. Schmidt, Washington, D. C			.13		*.09	*.10½				
C. S. Braisted, New York, City	.03		.04½ *.03							
Geo. F. Muth & Co., Washington, D. C					.11	.15				

Bidder.	Items.									
	141	142	143	144	145	146	147	148	149	150
Easton & Rupp, Washington, D. C	*$0.07½	*$0.09	*$0.15	*$1.25	*$1.50	*$3.30	$0.98 *2.50	*$1.35	*$2.10	*$0.75
Wm. H. Teepe, Washington, D. C			*.12				4.80			
Geo. R. Seiffert, Philadelphia, Pa							.62			

Bidder.	Items.									
	151	152	153	154	155	156	157	158	159	160
Easton & Rupp, Washington, D. C	*$0.75	*$0.07	*$0.08	*$0.09	*$0.10	*$0.14	*$0.16	*$4.20	$5.80	$2.80
R. Carter Ballantyne, Washington, D. C	.81									
Wm. H. Teepe, Washington, D. C	.90								*5.75	
Mackall Bros. & Flemer, Washington, D. C										*.98
J. H. Chesley & Co., Washington, D. C								4.60		
Shoemaker & Busch, Philadelphia, Pa										1.35

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	161	162	163	164	165	166	167	168	169	170
Easton & Rupp, Washington, D. C	$3.50	$3.90	*$5.60	*$6.50		*$2.10	*$6.50	*$0.21	*$0.09	$0.15
R. Carter Ballantyne, Washington, D. C		*2.52	7.55							
Wm. H. Teepe, Washington, D. C		3.30	6.50	12.00	*$2.50	2.80	6.70	.26	.12½	*.08½
W. A. Copenhaver, Washington, D. C								.26		
Shoemaker & Busch, Philadelphia, Pa	*3.25									
Caton Manufacturing Co., Baltimore, Md								.25	.15	.15

Bidder.	Items.									
	171	172	173	174	175	176	177	178	179	180
Easton & Rupp, Washington, D. C	*$0.70	*$3.60	$1.20	$0.55	$0.55	$0.14	$0.20	*$0.38	*$0.75	*$0.18
Wm. H. Teepe, Washington, D. C	.75	5.00	.75	*.39	*.39	*.13¼	*.17¼	.39		
F. A. Schmidt, Washington, D. C			*.60							

Bidder.	Items.									
	181	182	183	184	185	186	187	188	189	190
Easton & Rupp, Washington, D. C	*$0.12							$0.80		
Wm. H. Teepe, Washington, D. C					*$0.63			*.45		
J. C. Addison, Washington, D. C									A$4.50 *B 3.50	A$7.00 *B 5.50
Mackall Bros. & Flemer, Washington, D. C		$0.84 .55 .18	$0.10 *.06				$0.12½			
Wilmarth & Edmonston, Washington, D. C					12.75 6.32	$3.08 3.36	1.63 1.92 2.18			
J. H. Chesley & Co., Washington, D. C		*.39			.63	.35	.17		7.00	5.70
Shoemaker & Busch, Philadelphia, Pa		.75	.06¼	*$0.60	.73	*.29	*.12¼			

Bidder.	Items.									
	191	192	193	194	195	196	197	198	199	200
Easton & Rupp, Washington, D. C		*$6.25	*$1.22	*$1.12	$2.50	$2.15	$3.75			*$4.50
Wm. H. Teepe, Washington, D. C					*2.25	*2.12				
J. C. Addison, Washington, D. C	A$12.00 *B 9.00								$1.40	
Mackall Bros. & Flemer, Washington, D. C							4.24 *3.60 2.24	*$0.35	*1.55	
J. H. Chesley & Co., Washington, D. C	9.90	2.90								
Shoemaker & Busch, Philadelphia, Pa							3.70	.40	A1.59½ B.74	
Geo. F. Muth & Co., Washington, D. C							5.00			

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	201	202	203	204	205	206	207	208	209	210
R. Carter Ballantyne, Washington, D. C.	.....	.....	.....	.....	.....	.....	$0.38	$0.12 .18½ .31 .72¼	.....	.....
Mackall Bros. & Flemer, Washington, D. C.	$1.33	*$0.98	*$2.48	$0.36	.....	.....	.....	.....	*$0.73	$0.14¼ .19 .30
F. A. Schmidt, Washington, D. C.	.....	.....	.....	.....	.....	.....	*$0.26	.40	.....	.....
J. H. Chesley & Co., Washington, D. C.	.....	.....	.....	.....	.....	$1.00	.....	.....	1.38	.....
Shoemaker & Busch, Philadelphia, Pa.	*1.12	1.04	2.49	.34	$0.18	*1.00	.....	.....	1.58	.28½
Robert Mayer & Co., New York, N. Y.	.....	.....	.....	.....	.....	.....	.....	.....	.....	*.20
W. H. Butler, Washington, D. C.	.....	.....	2.60	.40	.15	.....	.....	.....	2.00	.50
Geo. Meier & Co., New York, N. Y.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.25
Caton Manufacturing Co., Baltimore, Md.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.35
Geo. F. Muth & Co., Washington, D. C.	.....	.....	2.50	*.28	*.15	.....	.25 .30	.12 .20 .32 *.72	1.40	.25

Bidder.	Items.									
	211	212	213	214	215	216	217	218	219	220
Mackall Bros. & Flemer, Washington, D. C.	.....	.....	.....	$0.74	$0.07½	.....	$0.12	*$0.03½	.....	.....
Herz Hoffa, Washington, D. C.	.....	.....	.....	1.90	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa.	$0.54	$0.75 .85 .60 .60 .30 .30 .70 .40	$0.28	.72	*.07½	*$0.06	*.05¾	.03¾	*$0.34	*$0.06
W. H. Butler, Washington, D. C.	.80	.....	.30	.80	.....	.....	.....	.05	.40	.....
Geo. Meier & Co., New York, N. Y.	.....	.75 .85 .65 .65 .35 *.40 .60 .35 2.00 .50 .80 .60 .50 .40 .40 .40 .30 .50	.....	.....	.....	.....	.....	.05	.....	.....
Caton Manufacturing Co., Baltimore, Md.	1.25		.....	.....	.....	.....	.....	.....	.40	.....
Geo. F. Muth & Co., Washington, D. C.	*.50	.....	*.25	*.68	.08½	.....	.....	.03½	.38	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	221	222	223	224	225	226	227	228	229	230
Mackall Bros. & Flemer, Washington, D. C	$1.78		$0.009							
Herz Hoffa, Washington, D. C								$5.00		*$0.50
J. H. Chesley & Co., Washington, D. C								*2.40	*$3.94	
W. D. Clark & Co., Washington, D. C				*$4.50	*$0.18 .18¾ .19	A $0.02½ B .02⅞ C .03¼ D .03¾	*$0.11			
Shoemaker & Busch, Philadelphia, Pa	*3.00	$0.09	*.007							.24
W. H. Butler, Washington, D. C		.80	.90							.70
Geo. Meier & Co., New York, N. Y	.75	*.75								
Geo. F. Muth & Co., Washington, D. C		.10	.007							

Bidder.	Items.									
	231	232	233	234	235	236	237	238	239	240
Herz Hoffa, Washington, D. C		*$14.40	*$12.15	*$13.12	*$0.40			*$1.25	$0.80	$0.40
J. H. Chesley & Co., Washington, D. C		4.38	3.70	3.95	.22	*$0.48	*$0.62		*.72	*.28
Shoemaker & Busch, Philadelphia, Pa	*$0.58									
C. A. Muddiman, Washington, D. C								.12		

Bidder.	Items.									
	241	242	243	244	245	246	247	248	249	250
R. Carter Ballantyne, Washington, D. C					$0.04½ .04 8/16	*$0.75		$1.29		
Valley Paper Co., Holyoke, Mass					J .15 K .18		34a.48 .20		L $0.15 M .30	
J. C. Addison, Washington, D. C							.15			
Peter Adams Co., New York, N. Y					*.16		*.18		*.11	
F. R. Walker & Son, New York, N. Y					.06 4/16					
Herz Hoffa, Washington, D. C	$0.40			*$1.50						*$1.90
F. A. Schmidt, Washington, D. C								1.08		
J. H. Chesley & Co., Washington, D. C	*.30	*$0.05	*$0.07	.74						
Eugene Dietzgen Co., Chicago, Ill								*1.05		
Geo. F. Muth & Co., Washington, D. C							1.34			

Bidder.	Items.									
	251	252	253	254	255	256	257	258	259	260
R. Carter Ballantyne, Washington, D. C				$8.43						
Herz Hoffa, Washington, D. C	*$3.50	*$2.50			$6.00	*$12.00	*$12.00	*$12.00	*$12.00	*$12.00
F. A. Schmidt, Washington, D. C				*7.00	*1.30					
Eugene Dietzgen Co., Chicago, Ill			$14.97							
Geo. F. Muth & Co., Washington, D. C			*7.54	8.74	1.75					

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	261	262	263	264	265	266	267	268	269	270
R. Carter Ballantyne, Washington, D. C.									*$1.23	
Herz Hoffa, Washington, D. C	*$12.00	*$12.00	*$12.00	*$12.00	*$12.00	*$12.00	*$12.00	*$12.00		*$1.25
F. A. Schmidt, Washington, D. C									2.25 2.00	
Eugene Dietzgen Co., Chicago, Ill									1.50	
Robert Mayer & Co., New York, N. Y									1.80	
Geo. Meier & Co., New York, N. Y									2.10	
Geo. F. Muth & Co., Washington, D. C									1.25	

Bidder.	Items.										
	271	272	273	274	275	276	277	278	279	280	281
R. Carter Ballantyne, Washington, D. C	*$0.67										
Herz Hoffa, Washington, D. C	1.00	*$1.50	*$0.95	*$0.95	*$0.95	*$0.95	*$0.95	*$2.40	*$0.30		*$18.00
F. A. Schmidt, Washington, D. C	.68										
Eugene Dietzgen Co., Chicago, Ill	.80										
Geo. F. Muth & Co., Washington, D. C	.70										

Bidder.	Items.								
	282	283	284	285	286	287	288	289	290
Easton & Rupp, Washington, D. C	$2.40	$2.40							$4.40
R. Carter Ballantyne, Washington, D. C	*1.56	*1.79	$7.70	$4.85	$1.80 1.56 1.37	$3.48 2.88 2.25			*.74
Wm. H. Teepe, Washington, D. C		2.40							
Peter Adams Co., New York, N. Y			9.91	4.50	1.66	*2.40			
F. A. Schmidt, Washington, D. C	2.05	2.05	9.90	6.25	1.65	2.60	*$0.65		.75
Eugene Dietzgen Co., Chicago, Ill			7.25	4.25					
Robert Mayer Co., New York, N. Y								$3.50	
Geo. Meier & Co., New York, N. Y								*3.00	
Geo. F. Muth & Co., Washington, D. C	1.95	1.95	*8.00	*4.95	*1.62	2.95			.75

Bidder.	Items.									
	291	292	293	294	295	296	297	298	299	300
Easton & Rupp, Washington, D. C		$2.85	$2.85							
R. Carter Ballantyne Washington, D. C	*$1.22	2.90	2.90							
Wm. H. Teepe, Washington, D. C		3.94	3.94							
Herz Hoffa, Washington, D. C				*$4.50	*$4.50	*$4.50	*$4.50	*$4.50	*$4.50	
F. A. Schmidt, Washington, D. C	1.25	*2.50	*2.50							*$0.50
Robert Mayer & Co., New York, N. Y				2.00	2.00	2.00	2.00	2.00		
Geo. Meier & Co., New York, N. Y		3.25	3.25							
Geo. F. Muth & Co., Washington, D. C	1.24	3.00	3.00							

* Contract awarded.

dule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	301	302	303	304	305	306	307	308	309	310
on & Rupp, Washing-, D. C			$0.55							
arter Ballantyne, ashington, D. C		$4.68			$4.53	$0.57 .14½ .37 .14½			*$1.55	*$2.08
Hoffa, Washington, C				*$12.00				*$1.50		
Schmidt, Washing-. D. C		4.80	.32		4.69	*.23	*$0.18			
ne Dietzgen Co., Chi-o, Ill		*3.60			*3.70	.40				
Braisted, New York, Y	*$0.50		*.15							
F. Muth & Co., Wash-ton, D. C		4.80			4.75	.60	.40		1.65	2.20

Bidder.	Items.									
	311	312	313	314	315	316	317	318	319	320
on & Rupp, Washing-, D. C							$7.25	$3.00	$4.45	$0.98
arter Ballantyne, ashington, D. C								*.03½	*.03½	
H. Teepe, Washing-, D. C								.04¾	.04¾	.70
Schmidt, Washing-, D. C		$0.78	$0.78	$0.78	$0.78	$0.78	*.63			
R. Seiffert, Philadel-ia, Pa										*.70
ne Dietzgen Co., Chi-o. Ill		*.75	*.75	*.75	*.75	*.75				
. Copenhaver, Wash-ton, D. C										.85
lark Seamans, New rk, N. Y										.78 1.20
Braisted, New York, Y		.27	.50	.50	.50	.50				
F. Muth & Co., Wash-ton, D. C		.83	.83	.83	.83	.83				

Bidder.	Items.									
	321	322	323	324	325	326	327	328	329	330
on & Rupp, Washing-, D. C	*$1.25	$6.00 5.00	*$11.75 5.00	*$11.75 5.00	$0.45	$0.45	$0.45	$0.53	$0.60	$0.53
arter Ballantyne, ashington, D. C	1.05 1.50									
H. Teepe, Washing-, D. C	1.33	5.40	6.00		.55	.55	.55	.50	.50	.50
R. Seiffert, Philadel-ia, Pa		3.48	3.48	3.48						
. Copenhaver, Wash-ton, D. C	1.12									
lark Seamans, New rk, N. Y	1.26	*5.00	5.00	5.00						
Braisted, New York, Y					*.30	*.30	*.30	*.25	*.25	*.25
. Rogers, New York, Y		4.20	4.20	4.20						
F. Muth & Co., Wash-ton, D. C					.40	.40	.40	.48	.48	.48
nan Baumgarten, ashington, D. C		3.74	3.74	3.74						

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	331	332	333	334	335	336	337	338	339	340
Easton & Rupp, Washington, D. C	$0.60	$0.55	*$0.43	*$0.71	*$0.40	*$0.65	$0.76	$0.76	$0.76	*$0.56
Wm. H. Teepe, Washington, D. C	.50	.75	.50	.75	.40	.65	*.68	*.68	*.68	.65
Geo. R. Seiffert, Philadelphia, Pa		.26								
C. S. Braisted, New York, N. Y	*.25	*.37								
Geo. F. Muth & Co., Washington, D. C	.48	2.88								

Bidder.	Items.									
	341	342	343	344	345	346	347	348	349	350
Easton & Rupp, Washington, D. C	*$0.68	$0.68	*$0.54	*$0.48	*$0.37	$0.72	$0.72	$0.42	*$0.13	*$0.36
Wm. H. Teepe, Washington, D. C	.75	*.65	.68	.57	.42	*.63	*.63	*.41	.13½	.39
W. A. Copenhaver, Washington, D. C								.38	1.31	.37

Bidder.	Items.									
	351	352	353	354	355	356	357	358	359	360
Easton & Rupp, Washington, D. C	$0.02¾	$0.02	*$0.01¼	$0.10	$0.31	$0.37	$0.02	$0.09	$0.06	*$0.03½
R. Carter Ballantyne, Washington, D. C							.03	.07		
Wm. H. Teepe, Washington, D. C	.02¼	*.01 99/100	.03	.16¾	.37	.43				
J. C. Addison, Washington, D. C	.01½			.75						
Geo. R. Seiffert, Philadelphia, Pa	.01¼			.08						
Shoemaker & Busch, Philadelphia, Pa				*.06½						
I. Clark Seamans, New York, N. Y	.015			1.50						
C. S. Braisted, New York, N. Y					*.30	*.32	*.01¾	*.04½	*.01¾	
L. H. Rogers, New York, N. Y	*1.25									
Geo. F. Muth & Co., Washington, D. C				.13						
Herman Baumgarten, Washington, D. C	.02									

Bidder.	Items.									
	361	362	363	364	365	366	367	368	369	370
Easton & Rupp, Washington, D. C	*$0.03	*$0.09	*$0.10	$2.90	*$0.70	$0.55			*$0.21	
Wm. H. Teepe, Washington, D. C		.15		*3.30	.75	.39			.26	
Mackall Bros. & Flemer, Washington, D. C							*$0.35	*$0.12½		
Wilmarth and Edmonston, Washington, D. C								1.63 1.92 2.18		
J. H. Chesley & Co., Washton, D. C								.17		*$7.00
W. A. Copenhaver, Washington, D. C									.26	
Shoemaker & Busch, Philadelphia, Pa						*.24	.40	.14½		
Caton Manufacturing Co., Baltimore, Md									.25	

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	371	372	373	374	375	376	377	378	379	380
Easton & Rupp, Washington, D. C	*$6.25	*$1.65	.....	*$1 44	*$1.98	*$1.72	$2.00 *1.48	*$3.60	$1.90	*$0.75
R. Carter Ballantyne, Washington, D. C	2.32 2.42 2.32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C	.....	.....	.....	1.45	2.02	1.75 1.40	2.02 1.68	3.61	*1.68	.....
J. C. Addison, Washington, D. C	.....	.....	$1.40	.....	.....	.....	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	.....	*1.55	.....	.....	.....	.....	.....	.....	.....
J. H. Cheeley & Co., Washington, D. C	2.90	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.....	A 1.59½ B .74	.....	.....	.....	.....	.....	.....	.....
I. Clark Seamans, New York, N. Y	.....	1.10 1.00	.....	.....	.....	.....	.....	.....	.....	.....

Bidder.	Items.									
	381	382	383	384	385	386	387	388	389	390
Easton & Rupp, Washington, D. C	$3.00	$4.45	*$1.25	*$1.48	*$1.88	$1.86	$0.95	$0.95	$0.38	$0.34
Wm. H. Teepe, Washington, D. C	2.85	4.28	1.33	.....	.....	.....	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.80	.44	.30½
Columbia Rubber Works Co., New York, N. Y	.....	.....	.....	.....	.....	.....	.....	*.56	*28½	*.15½
F. R. Walker & Son, New York, N. Y	*2.38	*3.57	.....	.....	.....	.....	.....	.....	.....	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.....	1.35	1.70	1.35	.85	.....	.....	.....
W. A. Copenhaver, Washington, D. C	.....	.....	1.12	1.00	1.20	1.20	.....	.....	.....	.....
I. Clark Seamans, New York, N. Y	.....	.....	1.26	1.20	1.41	*1.68	*.75	.....	.....	.....

Bidder.	Items.									
	391	392	393	394	395	396	397	398	399	400
Easton & Rupp, Washington, D. C	$0.09	$0.10	$0.11	$0.13	$0.24	$0.26	$0.38	$0.40	$0.40	$0.40
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.55	.....	.55
Mackall Bros. & Flemer, Washington, D. C	.08 9/16 *.06	.10 4/16 *.07 4/16	.11 3/16 *.08 1/16	.33 4/16 *.10	.28 9/11	.32 9/16	.35 9/16	.....	.....	.....
Columbia Rubber Works Co., New York, N. Y	.04 1/16	.05	.05 4/16	.06 9/16	*.14 1/16	*.16¾	*.19½	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	.....	.....	.....	*.30	*.30	*.30

Bidder.	Items.									
	401	402	403	404	405	406	407	408	409	410
Easton & Rupp, Washington, D. C	$0.40	$0.40	.....	.....	$0.48	$0.48	$0.40	$0.55	*$0.71	*$0.65
Wm. H. Teepe, Washington, D. C	.55	.55	$0.40	.....	.50	.50	.50	.75	.75	.65
F. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.82	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.26	.....	.....
C. S. Braisted, New York, N. Y	*.30	*.30	*.29	*$0.37	*.25	*.25	*.30	*.37	.....	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	411	412	413	414	415	416	417	418	419	420
Easton & Rupp, Washington, D. C	*$0.56	*$0.56	*$0.37	*$0.37	*$0.48	$0.72	*$0.33	*$1.50	$0.42	*$0.50
Wm. H. Teepe, Washington, D. C	.65	.65	.45	.42	.57	*.63	.36	2.50	.41	.60
W. A. Copenhaver, Washington, D. C	.....	.....	.....	.....	.....	.....	.33½	.....	*.38	.53½

Bidder.	Items.									
	421	422	423	424	425	426	427	428	429	430
Easton & Rupp, Washington, D. C	$1.56	*$0.36	*$0.50	*$0.48	*$0.30	$3.25	$9.60	*$0.01¼	$0.05½	$0.10
Wm. H. Teepe, Washington, D. C	1.58	.39	.55	.51	.33	*3.00	*9.40	.03	*.05½	.....
F. A. Schmidt, Washington, D. C	.....	.....	.....	.....	.....	2.00	.....	.....	.....	.....
W. A. Copenhaver, Washington, D. C	*1.31	.37	.51	.48	.30	.....	.....	.....	.06	.....
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	.05¾	*.08¾

Bidder.	Items.									
	431	432	433	434	435	436	437	438	439	440
Easton & Rupp, Washington, D. C	$1.25	$2.75	$0.25	$1.00	$0.31	$0.37	$0.02	$0.05	$0.02½	*$0.02½
Wm. H. Teepe, Washington, D. C	2.00	2.50	.20	*1.00	.37	.43	.....	.....	.....	.....
Herz Hoffa, Washington, D. C	1.25	*1.15	.....	.....	.....	.....	.....	.....	.....	.....
J. H. Chesley & Co., Washington, D. C	.....	.....	.12½	.....	.....	.....	.....	.....	.....	.....
George R. Seiffert, Philadelphia, Pa	.96	1.19	.11	.....	.....	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	*.78	.....	*.06	.....	.....	.....	.....	.....	.....	.....
I. Clark Seamans, New York, N. Y	1.50	2.10	.....	.....	.....	.....	.....	.....	.....	.....
C. S. Braisted, New York, N. Y	.....	.....	.....	.....	*.30	*.32	*.01¾	*.01¾	*.02½	.03

Bidder.	Items.									
	441	442	443	444	445	446	447	448	449	450
Easton & Rupp, Washington, D. C	*$1.90	$0.11	$0.15	*$0.03½	*$0.03	*$0.09	*$0.07½	*$1.50	*$3.30	$0.98 *2.50
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.15	.....	.....	.....	4.80
F. A. Schmidt, Washington, D. C	.....	*.09	*.10½	.....	.....	.....	.....	.....	.....	.....
Geo. R. Seiffert, Philadelphia, Pa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.62

Bidder.	Items.									
	451	452	453	454	455	456	457	458	459	460
Easton & Rupp, Washington, D. C	*$1.35	*$2.10	*$0.75	*$0.07	*$0.10	*$0.14	*$0.16	$4.70	*$4.20	$5.80
Wm. H. Teepe, Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	.....	*5.75
J. H. Chesley & Co., Washington, D. C	.....	.....	.....	.....	.....	.....	.....	*4.60	4.60	.....

* Contract awarded.

Schedule of bids and statement of contracts awarded and entered into, etc.—Continued.

Bidder.	Items.									
	461	462	463	464	465	466	467	468	469	470
Easton & Rupp, Washington, D. C	$2.80	*$6.50	*$2.10	*$6.50	*$0.21	*$3.60	$1.20	$0.55	$0.14	$0.20
Wm. H. Teepe, Washington, D. C	.....	12.00	2.80	6.70	.26	5.00	*.75	.39	*.13½	*.17½
W. A. Copenhaver, Washington, D. C	.....	.....	.....	.....	.26	.....	.....	.....	.....	.....
Shoemaker & Busch, Philadelphia, Pa	*1.35	.....	.....	.....	.....	.....	.....	*.28	.24	.18
Caton Manufacturing Co., Baltimore, Md	.....	.....	.....	.....	.25	.....	.....	.....	.....	.....

Bidder.	Items.								
	471	472	473	474	475	476	477	478	479
Easton & Rupp, Washington, D. C	*$0.38	*$0.18	.....	.....	.....	.....	.....	.....	.....
Wm. H. Teepe, Washington, D. C	.39	.....	.....	.....	.....	*$0.63	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	.....	$0.84 .55 .18	$0.10 *.06	.....	.....	.....	$0.12½	.....
Wilmarth & Edmonston, Washington, D. C	.....	.....	.....	.....	.....	6.32 12.75	$3.08 3.36	1.63 1.92 2.18	.....
J. H. Chesley & Co., Washington, D. C	.....	.....	*.39	.....	.....	.63	.35	.17	*$7.00
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.75	.06½	*$0.60	.73	*.27	*.12½	.....

Bidder.	Items.								
	480	481	482	483	484	485	486	487	488
Easton & Rupp, Washington, D. C	.....	.....	*$6.25	$2.50	$2.15	$3.75	.....	.....	$4.50
Wm. H. Teepe, Washington, D. C	.....	.....	.....	*2.25	*2.12	.....	.....	.....	.....
Mackall Bros. & Flemer, Washington, D. C	.....	.....	.....	.....	.....	4.24 *3.60	*$0.35	*$1.55	.....
J. H. Chesley & Co., Washington, D. C	*$5.70	*$9.90	2.90	.....	.....	.....	.....	.....	.....
W. D. Clark & Co., Washington, D. C	.....	.....	.....	.....	.....	.....	.....	.....	A1.50 B1.80 C2.40 *D3.00 E3.00
Shoemaker & Busch, Philadelphia, Pa	.....	.....	.....	.....	.....	3.70	.40	A1.50½ B .74	.....
W. H. Butler, Washington, D. C	.....	.....	.....	.....	.....	5.00	.....	.....	.....

* Contract awarded.

RECEIPTS FROM SALES OF GOVERNMENT PROPERTY.

Statement of deposits on account of sales of Government property, Navy Department, from November 1, 1894, to November 1, 1895.

[Compiled in the office of the Auditor for the Navy Department, by direction of the Secretary of the Treasury.]

Date of deposit.	Place where deposited.	By whom deposited.	Nature of property sold.	Amount carried to miscellaneous receipts.	Amount credited to the appropriation.	Total amount deposited.
1894.						
Nov. 14	Washington, D. C.	Stickney, F. H., disbursing clerk	Condemned horse	$9.50		$9.50
7	Portsmouth, N. H.	Barry, W. W., paymaster, U. S. N.	Bending machine	113.75		113.75
9	New York	Eggert's, D., Sons	Nautical books and charts		$14.09	14.09
12	do	Kenny, A. S., pay inspector	Steam barge	577.89		577.89
9	do	Sigsbee, C. D., commander	Nautical books and charts		150.00	150.00
7	San Francisco	Arnheim, S. S.	do		25.00	25.00
13	Philadelphia	Riggs & Bros	do		77.50	77.50
23	New York	Burtis, Arthur, pay inspector	Rent of Government property	125.00		125.00
23	do	Wilcox, W. B., passed assistant paymaster.	Condemned horses	82.50		82.50
Dec. 10	Washington, D. C.	Sigsbee, C. D., commander	Nautical books and charts		20.93	20.93
Nov. 16	do	do	do		54.48	54.48
Dec. 19	Portland, Me.	Senter, Wm., & Co	do		17.69	17.69
28	New York	Tiffany, O. C., paymaster	Clothing sold to Revenue Marines		343.51	343.51
29	Boston	Hutchinson, Chas. H	Nautical books and charts		103.37	103.37
1895.						
Jan. 4	Washington, D. C.	Sigsbee, C. D., commander	do		23.64	23.64
3	do	Lowry, H. B., quartermaster	Fuel sold to officers		313.67	313.67
8	do	Sigsbee, C. D., commander	Nautical books and charts		74.61	74.61
17	do	do	do		30.03	30.03
16	New York	Merrill's, R., Sons	do		19.13	19.13
14	New Orleans	Woodward, Wright & Co	do		33.80	33.80
18	do	Frigerio & Schully	do		18.89	18.89
21	Washington, D. C.	Cosby, F. C	Clothing sold Marine Corps		339.03	339.03
22	do	Lowry, H. B., quartermaster	Condemned Government property	46.83		46.83
18	San Francisco	Weule, Louis	Nautical books and charts		50.00	50.00
23	New Orleans	Frigerio, L.	do		5.00	5.00
25	Philadelphia	Riggs & Bros	do		91.00	91.00
22	San Francisco	Dillon & Co	do		56.50	56.50
30	Washington, D. C.	Sigsbee, C. D., commander	do		32.50	32.50
24	San Francisco	Arnheim, S. S.	do		17.25	17.25
31	Boston	Thaxter, S., & Son	do		89.45	89.45
31	Washington, D. C.	Lowry, H. B., quartermaster	Condemned Government property	39.43		39.43
Feb. 4	New York	Burtis, Arthur, pay inspector	Ordnance material		5,000.00	5,000.00
Jan. 31	Portland, Me	Senter, W., & Co	Nautical books and charts		12.43	12.43
Feb. 16	Washington, D. C.	Sigsbee, C. D., commander	do		74.36	74.36
15	do	Lowry, H. B., quartermaster	Fuel sold to officers		205.95	205.95
23	do	Sigsbee, C. D., commander	Nautical books and charts		72.05	72.05
25	Boston	Thompson, T. S., paymaster	Condemned naval stores	1,663.80		1,663.80

	27	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine clothing	54.89		54.89
	28	Baltimore, Md	O'Neal, M. V	Nautical books and charts		37.87	37.87
Mar.	1	New York	Sigsbee, C. D., commander	do		120.00	120.00
	20	do	Burtis, Arthur, pay inspector	Rent of Government property	125.00		125.00
	19	Washington, D. C	Lowry, H. B., quartermaster	Fuel sold to officers		122.31	122.31
	23	New York	Burtis, Arthur, pay inspector	Condemned naval stores	424.00	3,874.48	4,298.48
	28	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		56.09	56.09
	29	San Francisco	Weule, Louis	do		50.00	50.00
Apr.	1	Washington, D. C	Rand, Stephen, paymaster	Condemned naval stores	199.84	15,432.83	15,632.67
	8	Boston	Hutchinson, C. C	Nautical books and charts		81.24	81.24
	10	New York	Merrill's Sons	do		13.88	13.88
	10	Washington, D. C	Wainwright, R., lieutenant-commander.	do		53.59	53.59
	11	New York	Frigerio & Schully	do		15.05	15.05
	11	New Orleans	Woodward, Wright & Co	do		3.95	3.95
	12	San Francisco	Arnheim, S. S	do		41.00	41.00
	13	do	Dillon & Co	do		59.10	59.10
	17	Boston	Thaxter & Sons	do		67.93	67.93
Jan.	4	Washington, D. C	Stickney, F. H., disbursing clerk	Waste paper	152.18		152.18
Apr.	20	do	Lowry, H. B., quartermaster	Fuel sold officers		159.53	159.53
	22	New Orleans	Frigerio, L	Nautical books and charts		14.15	14.15
	30	Philadelphia	Riggs & Bros	do		71.23	71.23
May	10	Washington, D. C	Sigsbee, C. D., commander	do		75.93	75.93
	10	do	Rand, Stephen, paymaster	Ordnance material		990.68	990.68
	15	Portsmouth, N. H	Barry, W. W., paymaster	Condemned oxen	220.00		220.00
	24	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		47.83	47.83
	24	Erie, Pa	Ball, R. T. M., passed assistant paymaster.	Condemned ordnance material		53.42	53.42
	28	Washington, D. C	Director Nautical Almanac	Nautical Almanacs		19.52	19.52
	25	Portland, Me	Senter, Wm., & Co	Nautical books and charts		11.33	11.33
	28	Norfolk, Va	Galt, W. W., paymaster	Condemned naval stores	8,828.30	2,821.95	11,650.25
June	3	New York	Sigsbee, C. D., commander	Nautical books and charts		100.00	100.00
	11	Philadelphia	Peterson, A., paymaster	Rent of wharf property	300.00		300.00
	13	Washington, D. C	Sigsbee, C. D., commander	Nautical books and charts		15.31	15.31
	22	do	do	do		45.35	45.35
	22	New York	Tiffany, O. C., paymaster	Sale of clothing		514.57	514.57
	20	Baltimore, Md	Goldsborough, W., pay inspector	Nautical books and charts		111.25	111.25
	24	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine clothing	271.61		271.61
	21	Philadelphia	Griffing, G. H., paymaster	Condemned naval stores	3,335.64	685.98	4,021.62
	25	Washington, D. C	Lowry, H. B., quartermaster	Fuel sold to officers		278.11	278.11
	28	New York	Bliss, Jno., & Co	Nautical books and charts		74.68	74.68
	29	Washington, D. C	Stickney, F. H., disbursing clerk	Sale of waste paper	69.16		69.16
July	2	Baltimore, Md	Sloane, J., & Co	Nautical books and charts		15.00	15.00
	9	New York	Tiffany, O. C., paymaster	Sale of clothing		50.32	50.32
	8	Baltimore, Md	Goldsborough, W., paymaster	Nautical books and charts		51.75	51.75
	16	Washington, D. C	Director Nautical Almanac	Nautical Almanacs		125.46	125.46
	17	Boston	Hutchinson, C. C	Nautical books and charts		117.00	117.00
	18	New Orleans	Woodward, Wright & Co	do		10.84	10.84
	19	do	Frigerio, L	do		11.95	11.95
	24	Washington, D. C	Lowry, H. B., quartermaster	Fuel sold to officers		9.00	9.00
	8	New York	Merrill's, R., Sons	Nautical books and charts		22.90	22.90
	1	Baltimore, Md	Sloane, J., & Co	Nautical Almanacs		8.25	8.25

Statement of deposits on account of sales of Government property, Navy Department, from November 1, 1894, to November 1, 1895—Continued.

Date of deposit.	Place where deposited.	By whom deposited.	Nature of property sold.	Amount carried to miscellaneous receipts.	Amount credited to the appropriation.	Total amount deposited.
1895.						
July 9	Boston	Thaxter, S., & Sons	Nautical Almanacs		$30.15	$30.15
13	San Francisco	Dillon & Co	do		32.25	32.25
22	New Orleans	Frigerio & Schully	Nautical books and charts		14.33	14.33
22	San Francisco	Weule, Louis	do		50.00	50.00
24	do	Arnheim, S. S	do		51.25	51.25
Aug. 1	Washington, D. C	Sigsbee, C. D., commander	do		123.16	123.16
2	do	Stickney, F. H., disbursing clerk	Condemned carpet	$16.81		16.81
July 27	San Francisco	Dillon & Co	Nautical books and charts		60.15	60.15
30	Boston	Thaxter, S., & Sons	do		97.03	97.03
Aug. 3	Philadelphia	Riggs Bros	do		68.82	68.82
6	New York	Sigsbee, C. D., commander	do		150.00	150.00
9	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine stores	.05		.05
10	Baltimore, Md	Caswell, T. T., pay director	Clothing sold to cadets		346.16	346.16
9	Portland, Me	Senter, Wm., & Co	Nautical books and charts		17.99	17.99
14	Washington, D. C	Sigsbee, C. D., commander	do		76.84	76.84
15	do	Mahan, D. H., lieutenant	do		439.36	439.36
16	do	Lowry, H. B., quartermaster	Condemned marine clothing	13.87		13.87
17	do	do	Condemned marine stores	3.39		3.39
23	do	Mahan, D. H., lieutenant	Nautical books and charts		18.16	18.16
Sept. 11	do	Lowry, H. B., quartermaster	Fuel sold to officers		8.00	8.00
11	do	Mahan, D. H., lieutenant	Nautical books and charts		94.83	94.83
Aug. 3	Philadelphia	Riggs Bros	Nautical Almanacs		22.20	22.20
6	New York	Negus, T. S. and J. D	do		44.10	44.10
16	San Francisco	Weule, Louis	do		50.00	50.00
Sept. 27	New York	Burtis, Arthur, pay inspector	Rent of Government property	125.00		125.00
Oct. 7	do	Merrill's, R., Sons	Nautical books and charts		9.00	9.00
7	Boston	Hutchinson, C. C	do		27.51	27.51
10	Washington, D. C	Sigsbee, C. D., commander	do		87.17	87.17
12	do	Lowry, H. B., quartermaster	Fuel sold to officers		6.00	6.00
11	New Orleans	Woodward, Wright & Co	Nautical books and charts		4.82	4.82
16	Washington, D. C	Sigsbee, C. D., commander	do		76.42	76.42
12	Baltimore, Md	O'Neal, M. V	do		47.53	47.53
11	San Francisco	Arnheim, S. S	do		55.00	55.00
17	Boston	Thaxter, S., & Sons	do		80.09	80.09
16	New Orleans	Frigerio & Schully	do		15.35	15.35
18	Washington, D. C	Lowry, H. B., quartermaster	Condemned marine stores	.07		.07
16	do	do	do	1.00		1.00
22	New Orleans	Frigerio, L	Nautical books and charts		3.40	3.40
25	Washington, D. C	Stickney, F. H., disbursing clerk	Condemned matting	1.89		1.89
25	do	Sigsbee, C. D., commander	Nautical books and charts		383.09	383.09
	Total			16,801.40	36,498.13	53,299.53

REPORT

OF THE

JUDGE-ADVOCATE-GENERAL OF THE NAVY.

NAVY DEPARTMENT,
OFFICE OF THE JUDGE-ADVOCATE-GENERAL,
Washington, October 1, 1895.

SIR: In compliance with the Department's order of July 10 last, I have the honor to submit herewith a report of the operations of this office for the fiscal year ending June 30, 1895:

Résumé of work of the office from July 1, 1894, to June 30, 1895,

Letters received		5,962
Letters sent		8,873
General courts-martial ordered and charges and specifications prepared:		
Officers	5	
Men	97	
		102
Examining boards, ordered and reviewed		126
Retiring boards, ordered and reviewed		32
Courts of inquiry and boards of investigation ordered		11
Records of general courts-martial received and examined:		
Officers	8	
Men	113	
		121
General court-martial orders prepared and issued		108
Records of summary courts-martial received and examined		963

Schedule of offenses upon which charges were preferred and trials had before naval general courts-martial, as shown by the records received at this office, during the past fiscal year.

Absence from station and duty without leave	13
Assaulting and striking another person in the Navy	1
Assaulting another person in the service	1
Assaulting and attempting to kill another person in the service	1
Assault and battery in violation of article 8 of the Articles for the Government of the Navy	2
Assaulting and striking another person in the service	2
Assaulting and attempting to kill another person in the Navy	1
Assaulting and striking superior officer while in the execution of the duties of his office	1
Assaulting with a deadly weapon and wounding another person in the Navy	1
Assaulting and attempting to strike superior officer	1
Conduct to the prejudice of good order and discipline in violation of article 22 of the Articles for the Government of the Navy (fradulent enlistment)	17
Conduct to the prejudice of good order and discipline	13
Culpable inefficiency in the performance of duty	1
Desertion	38
Drunkenness on post	2
Drunkenness	10
Drunkenness on guard	1
Drunkenness on duty	4

Disrespectful language and deportment to superior officer while in the execution of the duties of his office	3
Disobedience of lawful order of superior officer	2
Embezzlement, in violation of article 14 of the Articles for the Government of the Navy	1
Leaving post before being regularly relieved	5
Leaving station before being regularly relieved	1
Refusing to obey the lawful order of superior officer	6
Resisting arrest	3
Sleeping on post	7
Scandalous conduct tending to the destruction of good morals	3
Sleeping on guard	1
Theft, in violation of article 8 of the Articles for the Government of the Navy	4
Through negligence suffering a vessel of the Navy to be stranded	1
Using profane, abusive, and threatening language toward superior officer	1
Using profane and obscene language toward superior officer	1
Using profane, obscene, and abusive language toward another person in the service	1
Using profane, abusive, and threatening language toward another person in the service	1
Using obscene and abusive language toward superior officer	1
Violation of a lawful regulation issued by the Secretary of the Navy	1
Violation of article 13 of the act entitled "An act to adopt the revised international regulations for preventing collisions at sea," approved March 3, 1885	1

The statement above given shows a continuance of the annual increase in the volume of correspondence and in the general work of this office, which has been noted for several years past.

Applications for removal of the mark of desertion, for issuance of certificate of discharge in true name, fixing date of discharge, etc.

Applications received for removal of charge of desertion, etc	151
Cases in which charge has been removed	16
Cases in which application has been denied	107
Cases in which date of discharge has been determined by the Department	19
Cases in which issuance of discharge in true name has been authorized	17
Cases awaiting information from applicant	9
Cases awaiting information from other offices and bureaus	4
Letters sent in relation to desertion cases	506

A comparison of the above table with the statements contained in prior reports on the same subject shows that the number of applications for the removal of the mark of desertion continue to decrease by reason of the fact that the statutory provision relating thereto (act of August 14, 1888) expired under limitations contained therein five years after the date of its passage, viz, August 14, 1893. Under existing law the Secretary has the power to remove the mark of desertion only in cases falling within the provisions of the act mentioned which were filed prior to August 14, 1893, and to cases in which it is shown to his satisfaction that the mark of desertion was erroneously entered or retained upon the records. Of the applications now received for the removal of the mark of desertion a considerable proportion are such as would have come within the purview of the act had they been filed in time. In rejecting such cases the applicants are advised that Congress alone can afford them relief.

CHILEAN INDEMNITY FUND.

At the date of my last annual report the whole amount of the fund, $75,000, placed in the hands of the Secretary of the Navy by the Government of Chile to be paid to seamen of the U. S. S. *Baltimore* had been distributed, with the exception of the sum of $1,000 to be paid to Joseph Quigley and $300 to be paid to William H. Nichols, these amounts hav-

ing been withheld by the Department because the two men named had deserted from the naval service. Joseph Quigley having surrendered himself at the navy-yard, Mare Island, Cal., and having been tried and punished by imprisonment for the offense of desertion, was, at the expiration of such imprisonment, paid the sum of $1,000 due him as his proportionate share of the indemnity fund. Nothing further has been done in the case of William H. Nichols, who is still a deserter at large, and his share of the fund, amounting, as above stated, to $300, is all that now remains.

LIMITATION OF PUNISHMENTS.

By a special act of Congress approved February 27, 1895, it was provided that whenever, by any of the Articles for the Government of the Navy of the United States, punishment on conviction of an offense is left to the discretion of a court-martial, the punishment therefor shall not, in time of peace, be in excess of a limit which the President may prescribe.

By an order dated March 6, 1895, a board of officers was convened for the purpose of considering the subject-matter of this act and of reporting upon the regulations necessary to its proper enforcement. A draft of a schedule of punishments deemed proper to be inflicted upon persons in the naval service found guilty of offenses the punishment for which is left discretionary with the courts-martial before which they are tried is now being prepared, and will be duly submitted to the President for his consideration and action.

DEPOSITIONS.

As a rule, the witnesses whose evidence is required before naval courts-martial are persons in the naval service. Such witnesses are subject to orders at all times, and have, as a general thing, no permanent place of duty, but are transferred from one station or vessel to another whenever occasion requires. The vessels composing one squadron may be together or widely separated, as the exigencies of the service demand. In consequence of these conditions it not infrequently happens that during the interval which must elapse between the commission of an offense and the trial of the person accused, witnesses important to the prosecution or defense are ordered to distant stations. This peculiarity of the naval service renders the use of depositions, under proper restrictions, far more important than in the case of criminal prosecutions before the civil courts, where the majority of the witnesses are generally taken from the permanent population of the community in which the offense is committed.

The evils consequent upon these peculiar conditions are several. The Department hesitates to order the trial of an offender in cases where the accused is at some navy-yard or station in the United States while witnesses whose testimony should be had at the trial are found to be on their way to Alaska, China, or the South Atlantic station. If convened, the court might, under such circumstances, be unable justly to determine the case brought before it. On the other hand, if the trial be delayed until the witnesses return, unnecessary hardship is imposed upon the person accused, whether guilty or innocent; and if witnesses widely separated are brought together especially for the purposes of the trial serious inconvenience to the service, loss of time, and expense is entailed. It is true that by the exercise of promptness and judgment in ordering courts and by keeping important witnesses within reach these

evils can be in some measure avoided; but cases arise in which this can not be done; and experience has, in my opinion, demonstrated that legislation on this subject is desirable. I am confirmed in this view by the fact that to correct similar evils arising from the same conditions (though doubtless to a less degree) in the Army, Congress has authorized the use of depositions in that branch of the service. Article 91 of the Articles of War provides that—

> The depositions of witnesses residing beyond the limits of the State, Territory, or District in which any military court may be ordered to sit, if taken on reasonable notice to the opposite party and duly authenticated, may be read in evidence before such court in cases not capital.

While carefully weighing and recognizing the objections to the use of depositions in criminal cases, under ordinary circumstances, I am nevertheless satisfied that the enactment, with reference to the Navy, of a clause similar to that above quoted, and which is in force with regard to the Army, would promote the administration of justice and tend to correct serious evils now existing, it being premised, of course, that it is by no means proposed or suggested that the examination of witnesses in open court be done away with, but that the admission of depositions be authorized only in cases where personal attendance is not practicable.

NAVAL EXAMINING AND RETIRING BOARDS.

It is provided by existing statutes regulating promotions in the Navy that no officer shall, under ordinary circumstances, be advanced to a higher grade on the active list until his mental, moral, and professional fitness to perform all his duties at sea have been established to the satisfaction of a board of examining officers appointed by the President, nor until he shall have been also examined by a board of naval surgeons and pronounced physically qualified to perform all his duties at sea. If upon such examination the board of surgeons finds the candidate not physically qualified for promotion, he is subsequently ordered to appear before a retiring board, where he undergoes a second physical examination, the purpose of which is to determine whether or not he shall be retired from active service, and if so, upon what pay, if any, he shall be so retired.

This second board must, of course, enter upon a consideration of the same facts and examine the same evidence passed upon by the previous board. The work of examination being thus duplicated, delay and consequent loss to the service is thereby incurred. If the two boards reach opposite conclusions, still further delay and confusion result, inasmuch as in such case an officer can be neither promoted nor retired. In any event, it seems wholly unnecessary that a matter of this character should be separately examined into and determined by two distinct boards.

The prolixity of present methods has resulted from the fact that the several statutory provisions on the subject of naval examining and retiring boards have been enacted at different times, and without reference to each other. Instead of convening a separate board for the purpose, it would seem entirely simple and natural to empower naval examining boards, where they find that an officer is not qualified for promotion, to proceed at once to determine all questions connected with his retirement. In such a case the evidence of every kind necessary to be considered is already before the board or can be readily obtained.

The act approved October 1, 1890, provides for the examination of certain officers of the Army, and for the regulation of promotions

therein, and this act was subsequently, July 28, 1892, made applicable to the Marine Corps. I have the honor to renew my former recommendation respecting the further extension of the provisions of the act of October 1, 1890, so as to include the naval service. This act was drawn after consideration of the statutes on the subject relating to the Navy and embodies their essential features while avoiding the duplication of work and delay above commented upon.

EXAMINATION OF PASSED ASSISTANT SURGEONS AND CHIEF ENGINEERS FOR PROMOTION.

Section 1493 of the Revised Statutes provides that "no officer shall be promoted to a higher grade on the active list * * * until he has been examined by a board of naval surgeons and pronounced physically qualified to perform all his duties at sea."

A careful consideration of this section and sections 1496 and 1497 prescribing an examination to determine the mental, moral, and professional fitness of all officers prior to promotion, in connection with other enactments in relation to promotion and advancement in the Navy, leads me to believe that it was the intention of Congress to require all officers of the Navy to submit to an examination before receiving promotion. Whether this was or was not the purpose of the several provisions of law on the subject, it would seem indisputable that such a requirement would tend to promote the efficiency of the service.

In consequence, however, of the use of the word "grade" in section 1493 it happens that certain officers of the Medical and Engineer Corps receive advancement without being subjected to any examination whatever. For example, line officers, when promoted from the grade of lieutenant-commander to commander, or from the grade of commander to that of captain, are subjected to examination, but chief engineers, when promoted to corresponding relative rank, are not examined, the Attorney-General, in an opinion dated March 18, 1892, having held that such examination is not required by existing law. Assistant surgeons in the Navy, after three years' service, are examined both physically and professionally before promotion to passed assistant surgeons; but passed assistant surgeons have never been commissioned, and are not required to pass either physical or professional examinations prior to promotion to surgeon. As a rule, passed assistant surgeons are not advanced in rank for a period of at least fifteen years, when, without either physical or professional examination, they are promoted to surgeon, where they usually remain the same length of time before they are examined for the grade of medical inspector. It follows that a medical officer having been examined and found qualified as a passed assistant surgeon is not examined again for a term of perhaps twenty-five or thirty years. The Surgeon-General reports that "this interpretation of the law is most harmful to the Medical Corps of the Navy and to the service at large."

It is recommended that Congress be asked to so amend existing laws as to provide that the requirements respecting the examination of officers as to their physical, mental, moral, and professional qualifications be made applicable to all grades of all corps in the Navy, and that when assistant surgeons are made passed assistant surgeons, and when chief engineers, passed assistant engineers, and passed assistant paymasters are advanced to higher relative rank, these officers be duly nominated by the President, confirmed by the Senate, and regularly commissioned.

The effect of such legislation would be to clear the subject of uncertainty by establishing distinctly as regular grades the several positions

above referred to, which are now treated as mere classes in grades, without involving any change of the status of the officers concerned. It would, moreover, remove the present anomalies in the method of appointment, and place them upon the same footing with other officers in the matter of examination for promotion.

It may be proper to add that it is not the purpose of this recommendation to suggest the institution in practice in the case of officers of the higher grades of a system of examinations scholastic in character. While it is believed that a physical examination of such officers is necessary, the scope of the inquiries to be made by the examining board with respect to moral and professional fitness should remain discretionary with the board, and may very properly be assimilated to the examination made in the case of officers of like relative rank whose examination is now a prerequisite to promotion.

CIVILIAN WITNESSES BEFORE NAVAL COURTS.

The machinery provided by existing law for the administration of justice by courts-martial is defective in one important particular. Neither military nor naval courts are clothed with the authority necessary to secure the testimony of civilian witnesses. It often happens that important facts necessary to the conviction or acquittal of a person accused lie exclusively within the knowledge of civilian witnesses, and as a matter of practice the testimony of such witnesses is more or less necessary before almost every important naval court-martial. The court, however, in all such cases, is wholly dependent upon the voluntary action of the civilian witnesses whom it may summon. If at any time such a witness declines to appear, or, having appeared, stands mute, the court finds itself powerless to act in the matter, the ends of justice are defeated, and the accused is wrongfully convicted or acquitted, as the case may be, inasmuch as the court is compelled to proceed without having heard material evidence known to exist. Recognizing the humiliating position in which courts-martial are thus placed, it has been found necessary in some instances to allow offenses to go unpunished where the evidence required to convict was known to be exclusively within the knowledge of civilian witnesses, and where such witnesses would not signify in advance their willingness to testify.

From an examination of the legislation on the subject it does not appear by any means clear that Congress intended to leave courts-martial in a position so derogatory to the dignity of such a tribunal. With regard to military courts, section 1202 of the Revised Statutes provides that:

> Every judge-advocate of a court-martial shall have power to issue the like process to compel witnesses to appear and testify which courts of criminal jurisdiction within the State, Territory, or District where such military courts shall be ordered to sit may lawfully issue.

The Attorney-General has held, however, that the provisions of this section are not applicable to the Navy (XIX Op., 501).

Article 42 of the Articles for the Government of the Navy, contains the following provision:

> Whenever any person refuses to give his evidence, or to give it in the manner provided by these articles, or prevaricates, or behaves with contempt to the court, it shall be lawful for the court to imprison him for any time not exceeding two months.

Notwithstanding the use of the comprehensive term "any person," in article 42, it is observed that the article itself is a part of section

1624 of the Revised Statutes, which provides that "the Navy of the United States shall be governed by the following articles," and I find no case on record in which the power conferred by article 42 has ever been exercised except with respect to persons in the naval service.

The Judge-Advocate-General of the Army has repeatedly urged the enactment of the legislation necessary to remedy this defect in the laws relating to courts-martial. Such legislation has also been urged in prior annual reports of this office, and has been recommended by the Secretary of the Navy. Its necessity becomes constantly more urgent with the progress of modern naval development, a natural incident of which is that persons in the naval service are less isolated as a class and are brought far more frequently than formerly into relationship with civilians. In this connection it is important to note that the same causes have produced a like result in the British navy, and the difficulty has been met by the following provisions, which are contained in article 126 of the British army act:

(1) Where any person who is not subject to military law commits any of the following offenses, that is to say:

On being duly summoned as a witness before a court-martial, and, after payment or tender of the reasonable expenses of his attendance, makes default in attending; or, being in attendance as a witness, refuses to take an oath legally required by a court-martial to be taken; or refuses to produce any document in his power or control legally required by a court-martial to be produced by him; or refuses to answer any question to which a court-martial may legally require an answer, the president of the court-martial may certify the offense of such person under his hand to any court of law in the part of Her Majesty's dominions where the offense is committed which has power to punish witnesses if guilty of like offenses in that court, and that court may thereupon inquire into such alleged offense, and after examination of any witnesses that may be produced against or for the person so accused, and after hearing any statement that may be offered in defense, if it seem just, punish such witness in like manner as if he had committed such offense in a proceeding in that court.

It would seem that the failure of Congress to enact some effective provision on this subject must be due to the fact that the necessity for such legislation, and the scope which it might properly take, has not been brought to its attention with sufficient clearness. It is important to observe that a provision of this character need not and should not be so framed as to give to naval courts any jurisdiction over civilians or any right to punish them for offenses. Its purpose and effect should be merely to empower such courts to obtain all evidence proper and necessary to enable them to hear and justly to determine the matters over which they have jurisdiction. So far as the persons over whom the jurisdiction of naval courts may be exercised is concerned, it extends, in time of peace, to persons in the naval service only, and it is neither proposed nor desired in any way to enlarge their jurisdiction in this respect; but there is no provision of the Constitution or of any statute limiting naval courts to the consideration of evidence which may be in the possession of one class of witnesses only or indicating legislative intent that they should be so limited. To thus cripple them in the exercise of the functions which lie within the proper sphere of their jurisdiction tends to defeat the purposes for which they were created. Whenever it has become incumbent upon the higher civil courts of the United States to review questions connected with the jurisdiction of military and naval courts-martial the decisions of the former have been uniformly characterized by the broadest liberality and the fullest recognition of the importance of the functions of naval and military courts when operating within the sphere to which they are properly restricted.

I earnestly renew the recommendations contained in my former reports on this subject, and would suggest as a solution of the difficulty, which may be free from objection in any quarter, that Congress be asked to enact some legislation providing that the refusal of civilian witnesses to appear and testify in response to the summons of naval courts-martial be declared an offense, and that upon conviction thereof before any civil court of the United States persons so offending may be punished by the civil court in like manner as if the offense had been committed in the course of a proceeding before such civil court.

In this connection it is observed that section 3175 of the Revised Statutes authorizes the judges of district courts and commissioners of circuit courts of the United States to punish as for contempt the refusal or neglect of any person to obey the summons of, answer interrogatories, or give testimony before collectors of internal revenue. A similar provision, modified only so far as to render it applicable to the naval service. would probably meet all requirements.

LIVE OAK TIMBER RESERVATIONS.

In my last annual report attention was invited to the fact that by successive executive orders issued from time to time during the early part of the present century certain tracts of land in the States of Alabama and Mississippi had been reserved from the public domain for the use of the Navy Department as a source of supply of live-oak timber, a material no longer required in large quantities for naval uses, and it was recommended that, inasmuch as the continuance of these tracts in a state of reservation appeared to serve no useful purpose, they be restored to the public domain. This recommendation having been adopted by the Department, Congress by a special act approved March 2, 1895, authorized the Secretary of the Navy to certify "the whole or such portion or portions of the several tracts of land in the States of Alabama and Mississippi heretofore set apart and reserved for naval uses as are no longer required for the purposes for which they were reserved, or for any purposes connected with the naval service." In pursuance of the provisions of this act the several tracts of land so long held in reservation were, under date of March 14, 1895, certified to the Secretary of the Interior, in order that they might be restored to the body of the public domain, the Department being satisfied that their further retention in a state of reservation could serve no useful purpose.

SITE FOR DRY DOCK AT ALGIERS, LA.

The particulars respecting the then pending purchase for the purpose of enlarging the naval reservation at Algiers, La., of the two tracts of land at that place known as the Olivier and Trepagnier estates were given in my last annual report. The purchase has since been concluded by the payment, in pursuance of the decree of the court and to the parties therein named, of the sum of $37,000 for the Olivier property and $7,750 for the Trepagnier property, the deeds of conveyance in each case having received the approval of the Department of Justice.

PURCHASE OF ADDITIONAL LAND AT KEY WEST, FLA.

By a clause contained in the act making appropriations for the naval service for the fiscal year ending June 30, 1896, approved March 2, 1895, the sum of $20,000 was appropriated for the purchase of an additional

ot for the storage of coal at the naval station, Key West, Fla. In pur-
uance of this authorization a plot of ground fronting on the waters of
he harbor of Key West and adjoining the naval station was purchased
rom William Curry and wife August 16, 1895. By the acquisition of
his tract the property of the naval station is extended to Green street,
nd additional facilities for the storage of coal, long needed, have been
cquired.

NAVAL OBSERVATORY LANDS.

By the joint resolution to establish an Observatory Circle as a pro-
ision for guarding the delicate astronomical instruments at the United
States Naval Observatory against smoke or currents of heated air in
heir neighborhood and undue vibrations from traffic upon the extension
f public thoroughfares in the vicinity, and for other purposes, approved
August 1, 1894, it was provided that no street, avenue, or public thor-
oughfare in the neighborhood of the buildings erected upon the United
States Naval Observatory grounds, Georgetown Heights, District of
Columbia, shall extend within the area of a circle described with a
adius of 1,000 feet from the center of the clock room at the observa-
ory. The resolution further authorized the Secretary of the Navy "to
rant the right of way for the extension of Massachusetts avenue
hrough the limits of the observatory grounds, exterior to said circle;"
o sell certain portions of the observatory lands lying without the lim-
ts of the circle, and to purchase, either directly or by condemnation,
ertain lands belonging to private parties lying within the limits of the
ircle, as established by the resolution.

In pursuance of the provisions of this resolution the Department,
nder date of October 22, 1894, granted the right of way for the exten-
ion of Massachusetts avenue through the observatory grounds. In
urther compliance with the requirements of the act a board of three
ppraisers, consisting of Hon. John W. Ross, president of the Board
f Commissioners of the District of Columbia, Capt. F. V. McNair,
United States Navy, and Mr. Thomas E. Waggaman, was appointed to
etermine and fix the price at which the two tracts of land belonging
o the Government and lying outside the limits of the circle should be
old; and in order that full opportunity to purchase said lands might
e afforded, it was determined to subdivide the larger tract into lots
f convenient size and to offer them for sale, after public advertise-
nent, purchasers being allowed, at their option, to bid upon any one or
nore of the subdivisions or upon the tracts in entirety. One of the
racts to be sold, containing 14.45 acres, situated north and east of the
Observatory Circle, was appraised at $141,454.57, or a fraction less than
2½ cents per square foot. The other tract, fronting upon Massachu-
etts avenue and abutting upon Observatory Circle on the west, con-
aining 1.218 acres, was appraised at $18,569.63. Under provisions
ontained in the joint resolution these lands could not be sold at less
han the appraised price. Whether because the appraisement was
eemed by intending purchasers to be too high or because the past year
vas an unfavorable one in which to effect a sale of suburban real estate
n Washington, no offers to purchase the tracts in question at or above
he appraised price were received. The sale was therefore not consum-
nated, and inasmuch as it was provided in the joint resolution that the
urchase of the lands necessary to complete the Government's owner-
hip of the Observatory Circle was to be made from the proceeds of the
roposed sale, such purchase was, of course, not effected.

It being contemplated by the joint resolution that the preliminary expenses necessarily to be incurred in advertising, etc., should also be defrayed from the proceeds of the sale, and no other provision having been made therefor, such expenses remain unpaid, and an estimate covering the amounts will be submitted to Congress at its approaching session.

NAVAL PRISON, BOSTON, MASS.

In April last I made a careful inspection of the naval prison at Boston, Mass., and found it to be in a very satisfactory condition and much better adapted to meet the demands made upon it than heretofore, in consequence of improvements which have been completed during the past year. The new cells on the second floor of the prison, twenty-four in number, are of open ironwork, so that the prisoners confined therein can always be kept under observation. There is a mess room on the same floor, its dimensions being 45 by 15 feet. After proper arrangements are made therefor, fifty-five persons can be seated at the mess tables in this room. On the lower floor three dark cells have been cut out in order to admit of a stairway leading to the second floor. The number of cells remaining on the lower floor is thirty-nine, and there is now ample capacity in the prison for the accommodation of fifty-two persons without using any of the dark cells which remain. By using these dark cells the prison can accommodate sixty-three persons. A room of medium size has also been provided for use as a prison hospital.

Pursuant to a recommendation contained in my last annual report under the head of "Employment of prisoners," you issued General Orders, No. 440, which advises courts-martial to add to sentences involving imprisonment a provision requiring that persons so sentenced shall perform police duty while imprisoned. This innovation has borne excellent results, as the open-air employment of prisoners has been found to conduce to their health, to aid prison discipline, and incidentally to contribute to the cleanliness and sanitary condition of the yard.

On account of the confined space about this prison, and in view of the fact that it is located in a thickly populated part of the city, it was decided not to equip the prison guards with firearms, in consideration of possible injury which might result to innocent persons either within or just without the limits of the yard if firearms should be used in cases of attempted escape. Instead, the guards were furnished with stout cudgels, and thus far no difficulty has been experienced in consequence, but one attempt at escape having been made, and that having proved unsuccessful.

The prison at the navy-yard, Mare Island, Cal., is believed to be in good condition, and the system of employing the prisoners at out-of-door police duty in operation there, as at Boston, is found to work beneficially.

BIENNIAL EXAMINATION OF OFFICIAL BONDS.

Section 5 of the act making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30, 1896, approved March 2, 1895, contains the following provision:

> Hereafter every officer required by law to take and approve official bonds shall cause the same to be examined at least once every two years for the purpose of ascertaining the sufficiency of the sureties thereon.

The inquiries contemplated by this clause are, in the case of the Army, made by inspectors-general. Inasmuch, however, as there are no officers under the jurisdiction of the Navy Department who have acquired such acquaintanceship with property holders as would enable them to make report on this subject, and especially since the sureties offered are scattered all over the United States, it was thought that the examinations required by the provision of the law above quoted might properly and with no very great inconvenience be made by the United States attorneys for the respective districts in which the sureties reside.

With this purpose in view the Department, under date of March 28, 1895, addressed a letter to the honorable the Attorney-General requesting his opinion upon "the question of having the necessary examination into the character and value of the property of the sureties on the official bonds approved by this Department made by the United States attorneys for the respective districts in which the various bondsmen reside." The opinion of the Attorney-General upon this question, communicated in his letter to the Department of the 30th idem, is as follows:

I am not advised of any statute which either requires or authorizes a United States attorney to make an examination of the character suggested, and am of the opinion that he can not be called upon to render any such service to any officer of the Navy Department charged with the duty of approving official bonds.

The aforesaid opinion having rendered it impossible to refer official bonds to the Department of Justice for the certification as to the solvency of the sureties thereon, the Department has been constrained to adopt the only remaining available method of making the required biennial examinations of bonds, i. e., to forward to each pay officer concerned a "certificate of sufficiency of sureties" for execution, said certificate containing forms for the justification of the several sureties on such officer's bond, and also a form for the certification, by a United States attorney or a judge or clerk of a United States court, to the effect that he has personally inquired into the solvency of the sureties, and is satisfied that they are sufficient for an amount double that of the bond. In case the surety is a corporation qualified to become sole surety on a bond, under the act approved August 13, 1894, the certificate differs slightly in detail from the one just described.

Such certificates require officers concerned to go to the same trouble and expense for affidavits thereon, etc., as though they were filing new bonds. In other words, pay officers must incur, practically, the expense of filing new bonds every two years, instead of every four years, as contemplated by section 5 of the act of March 2, 1895, above referred to, a further provision of which is that "hereafter every officer whose duty it is to take and approve official bonds shall cause all such bonds to be renewed every four years after their dates." Moreover, while it is practicable to promptly secure evidence as to the solvency of the bondsmen of a pay officer stationed in the United States, unavoidable delays frequently occur in complying with the law requiring the biennial examination of bonds in the case of officers on duty in foreign waters, particularly when errors occur in their execution. Five or six months sometimes elapse after the date of the letter instructing a pay officer to call upon his sureties for evidence as to their sufficiency before properly executed certificates are received by the Department, and this without fault on the part of the officer concerned. It is clear that no such delays would be incurred if the district attorneys were required to examine these bonds.

As appears from the foregoing statement, the law as it now stands provides for the biennial examination of the bonds of all pay officers of the Navy, without providing adequate machinery for or defraying the cost of such examination.

In view of the foregoing, I have the honor to recommend that Congress be requested either to appropriate the moneys required to defray the expenses necessarily incurred in examining bonds of officers of this Department under the method at present employed therefor, or to make it the duty of the United States attorneys to make such examinations upon request of the Secretary of the Navy, they to be allowed a reasonable and proper fee for the performance of such additional service. I am of the opinion that the latter method would be much more practicable and satisfactory.

Prior to the approval of the act of Congress herein mentioned it was the practice of the Department to require pay officers to renew their bonds at the end of each five years. By the terms of the present law it is made compulsory to renew them every four years at least, and to examine them every two years. The labor involved in examining bonds under the system at present employed is almost, if not quite, as great as in renewing them. The work devolving upon this office in connection with the examination of bonds has, therefore, been very greatly augmented by the recent enactments above discussed.

DISCHARGE FROM THE SERVICE WITH BAD CONDUCT DISCHARGE.

In my last annual report attention was invited to the good effect during 1894 of General Orders No. 413, issued to the service by the Department under date of May 15, 1893, in diminishing the number of enlisted men discharged from the service with bad conduct discharge in pursuance of sentences of summary courts-martial.

During the early part of the period covered by the present report the number of men so discharged remained comparatively small; but during the latter part of last winter it was observed that, while the general order above mentioned still continued, to some extent, to act as a check upon summary courts-martial in restraining them from adjudging the sentence herein referred to, particularly in cases where continuous-service men were tried, there was manifested, nevertheless, an apparently increasing tendency to impose said sentence as a punishment for offenses committed by men who had not proven themselves to be incorrigible.

With a view to exercising greater supervision in such cases the Department, under date of May 3, 1895, issued a second general order relative thereto (No. 445), directing that thereafter the sentence referred to should not be carried into effect until an order for discharge had been received from the Bureau of Navigation, or the Colonel Commandant, as the case might require; and making it the duty of the convening authority, before acting upon such a sentence, to spread upon the record of proceedings of the court a brief synopsis of the services of the person so sentenced and of the offenses which he had committed during his current enlistment.

The effect of the last-mentioned general order has been so salutary that at present it may be truly said that enlisted men of the Navy and Marine Corps are never discharged in pursuance of sentences of summary courts-martial, except where they have proven themselves, by

repeated offenses, to be incorrigible, or where, by the commission of some one offense of an especially grave character, they have shown themselves to be altogether undesirable for the naval service.

ADMINISTERING OATHS.

In pursuance of the recommendation of this office, indorsed by the Department, Congress, by the act approved January 25, 1895, authorized judge-advocates of naval courts-martial and courts of inquiry, commanders in chief of naval squadrons, commandants of navy-yards and stations, and officers commanding vessels of the Navy, as well as the adjutant and inspector, commanding officers, and recruiting officers of the Marine Corps, to administer oaths "for the purpose of the administration of naval justice and for other purposes of naval administration."

The enactment of this provision has proven to be a great convenience in many cases, and has resulted in a material saving of expense in the item of notaries' fees.

CERTIFIED CHECKS IN LIEU OF BONDS.

In my previous annual reports attention has been invited to the serious inconvenience sometimes occasioned by requiring bonds to accompany all contracts for furnishing naval supplies. It is well known that large dealers with whom the Department would find it advantageous to deal are frequently deterred from submitting proposals, where the quantity of supplies to be furnished is not great, in consequence of their reluctance to solicit the favor of personal suretyship or to enter into the elaborate formal obligations necessary to obtain corporations as sureties. The service thus loses the advantage of the competition which the appearance in the field of these large dealers would develop. The difficulty could be readily and satisfactorily met without prejudicing the interests of the Government by a provision authorizing the acceptance of certified checks in lieu of bonds in cases where such action is deemed by the Secretary of the Navy to be desirable.

Certified checks covering the full amount of the contract could be given without inconvenience by bidders of the class whose competition is especially desired, and such checks might very properly be accepted in lieu of the written guaranty required by law to accompany proposals for naval supplies, as well as in lieu of the bond for the faithful performance of the contract when awarded.

Under date of August 5, 1895, the Comptroller of the Treasury advised the Secretary of the Navy that, if in his discretion in the matter, he should enter into contracts covering small items of stationery needed in this Department during the current fiscal year without requiring contractors in such cases to give bond, payments thereunder would be credited in the accounts, as it was not considered that there is any specific provision of law rendering a bond essential to the completeness of such a contract or to the validity of the payments to be made under it. While this decision will enable the Department to dispense with bonds in certain instances where the amount of the contract is insignificant, it will probably not be deemed advisable to dispense with bonds in any very large number of cases, and I am, therefore, of the opinion that the enactment of a statute authorizing the acceptance of certified checks in lieu of bonds would be of decided advantage to the service.

COUNTERFEITING OFFICIAL STAMPS.

An attempt having been made to defraud the Government by means of the use of a facsimile of the official stamp of an inspecting officer, and the question having arisen as to the statute under which a person guilty of such an offense could be prosecuted, a state of the law was discovered which appears to me to be somewhat anomalous. Section 5440 of the Revised Statutes explicitly provides:

> If two or more persons conspire either to commit any offense against the United States, or to defraud the United States in any manner or for any purpose, and one or more of such parties do any act to effect the object of the conspiracy, all the parties to such conspiracy shall be liable to a penalty of not less than one thousand dollars and not more than ten thousand dollars, and to imprisonment not more than two years.

The Attorney-General has, however, expressed the opinion that to make a conspiracy under this section more than one party is necessary, and that if an accomplice of the offender could not be found there could be no prosecution. It appears somewhat unreasonable that the statute law of the United States should provide for the punishment of an offense of this character if committed by two or more persons and make no provision for such punishment if committed by one person.

It is respectfully recommended that Congress be asked to enact such legislation as will provide for the prosecution of any person who may be guilty of fraudulent practices of the character above indicated.

ACQUISITION OF PATENT RIGHTS.

It not infrequently happens that letters patent are issued to officers of the Navy covering inventions the use of which in some branch of the service is desirable. Where an officer of the Navy has been assigned to the duty of making experiments with a view to suggesting improvements upon existing methods, and where facilities for conducting such experiments are furnished by the Department, it has been held that any improved devices which may be the product of such experiments are the property of the United States. On the other hand, where an invention does not relate to a matter as to which the officer was employed to make experiment, and where the fees and expenses of obtaining letters patent were paid by him, no expense being authorized or facilities furnished by the Department in developing the invention, it has been held that a patent issued therefor is not only the property of the inventor, although an officer of the Navy, but that such patent is valid as against the Government itself. It follows that if the United States desire to use the improved devices covered by such letters patent, the inventor's consent must first be obtained, and he must be paid therefor such royalty as he may demand. In practice it has been found that the satisfactory adjustment of the rights of the parties has, in some instances, proven to be a matter of difficulty.

In the construction and equipment of a modern vessel of war it becomes desirable to employ numerous patented devices, not only in the armament and machinery of the vessel, but in lighting, ventilation, and the countless details of equipment, and it is essential, in order to secure the highest efficiency, that these devices be the best that recent progress has developed. This, therefore, is a subject of growing importance.

It is understood that last year the British Admiralty found it necessary to issue an important regulation with reference to the interests in

patents or inventions which might be acquired by "officers or subordinates who hold staff appointments, or who may be now or hereafter employed in any administrative, instructional, manufacturing, or experimental department, * * * or appointed to any ship for service." Some of the provisions of this regulation are hardly applicable to conditions existing here; but attention is respectfully invited to the requirement, first, that "the invention may be used by or for Her Majesty's service, and that the terms of payment, if any, shall be decided by the Admiralty," and second, that "in settling terms, either for assignment or use, regard will be had by the Admiralty to any facilities in originating, working out, and perfecting the invention which the inventor may have enjoyed by reason of his official position."

I have the honor to recommend that Congress be asked to enact legislation providing that the United States may at any time acquire the right to use devices covered by letters patent issued to any officer of the Navy, whether retained in his ownership or assigned to others, upon such terms and at such rate of compensation as may by the Secretary of the Navy be deemed just and equitable.

INSTRUCTION IN MILITARY LAW.

Attention is invited to the fact that the course of study prescribed at the Naval Academy does not include instruction in military law. Immediately upon being graduated from the Naval Academy an officer may be called upon at any time to perform the duty of recorder of a summary court-martial, and early in their career all officers of the Navy are subject to service as members or judge-advocates of general courts. They ought not to be required to enter upon these duties, which are important to individuals and to the service at large, without preliminary training. I venture to suggest that a brief course in military law be added to the curriculum at the Naval Academy, in order that young officers may be acquainted with their duties in this respect.

Very respectfully,

SAM C. LEMLY,
Judge-Advocate-General.

The SECRETARY OF THE NAVY.

REPORT

OF THE

SUPERINTENDENT OF NAVAL WAR RECORDS

TO THE

SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
LIBRARY AND NAVAL WAR RECORDS,
Washington, D. C., August 30, 1895.

SIR: I have the honor to transmit herewith estimates for the Office of Naval War Records and for the Department library, for the fiscal year 1896–97, marked respectively A, B, and C.

Since my last annual report, the first volume of the Official Records of the Union and Confederate Navies in the War of the Rebellion has been published by this office, under authority of an act of Congress approved July 31, 1894. In accordance with this act, the distribution of the volume, comprising an edition of 10,000 copies, has been completed, as far as the lists of addresses of recipients of the Congressional and departmental quotas have been received. By the terms of the law, the volumes remaining on hand after this distribution are to be sold by the Department at 10 per cent above their cost price, the proceeds of which sale is to be turned into the Treasury. There being comparatively but a small number of Members thus far who have failed to send in their quota of addresses, and as these gentlemen have been allowed until the meeting of the next Congress to do so, I think the number of volumes remaining for sale will be small.

The second volume of the records is in the hands of the printer and will soon be issued, and it is hoped that two more volumes will be ready for the press during the present fiscal year. The demand for this publication has been large, and it has been found impossible for this office to supply the numerous requests for the work. Its reception by the naval service, by the press, and by the public generally has been most gratifying, and it is to be regretted that the original edition was not larger, in order that the Department could have supplied some of the many applications which it was compelled to refuse for lack of volumes. In this connection I desire to bring to your notice the fact that the quota of 1,048 copies allowed the Navy Department is not sufficient to supply the work to officers of the Navy, contributors, etc., so that by your direction the volumes have been sent only to such naval officers as had seen active service during the civil war. It seems, however, only just that all officers of the Navy should be supplied with the work if

they desire it, and to this end I recommend that Congress be asked to increase the quota of the Navy Department by 1,000, making the whole edition 11,000 copies.

In order to carry out properly the views of Congress in reference to this publication, I deem it essential that there be a reorganization of this office and an increase in expert clerical assistance. It is estimated that there is enough original manuscript selected to make between 20 and 30 volumes of the records, of from 900 to 1,000 pages each. To get this material into the proper shape necessitates the reading of between 7,000 and 8,000 volumes of original manuscript, with a view to the selection of such papers as may be pertinent to the character of the work. The papers so selected are copied, verified with the originals, carefully examined as to dates and correct spelling of geographical and proper names, and are then classified, collated, headed, and compiled, after which the proof is read and the volume printed, indexed, bound, and wrapped, when it is distributed all over the country, to the addresses filed in this office by Members of Congress, to authorized recipients of the work. This distribution of 10,000 copies of each volume, of which an accurate record must be kept, is in itself no small undertaking, and necessitates an amount of detail and attention which requires care. The correspondence, also, of the office in reference to the publication and distribution of the records has grown into large proportions.

To execute properly the task of publication of this important historical work, as thus briefly outlined, the force of this office is, in my judgment, entirely inadequate. During the past year, by the most assiduous and unremitting labor, we have managed to get out one volume and nearly completed another, which, although a fair beginning, is still an exceedingly small showing when the magnitude of the future work is considered. In view of the large sums which have already been supplied under authority of Congress upon the collection and preparation of these records, it would seem to be in the true interest of economy to the Government that their publication should now be pushed to completion without unnecessary delay.

An examination of the present plan of publication which has been adopted by the Department will show that the selection of original manuscript to be introduced into the records rests entirely in the hands of the superintendent. I am of the opinion, in the interest of the true historical value of the work, that this duty could be performed to better advantage by a board of publication, to be composed of one naval officer and two civilian expert members. There seems to be strong reasons in favor of this board, chief among which may be cited that such an organization would give a definite and settled policy to the management of the publication until its completion, which changes of the naval member would not affect. That such a settled policy is vital to the success and speedy completion of the work seems to be beyond question. Another reason in favor of such a board, if properly constituted, is that the question of the selection or rejection of original manuscript for introduction into the compilation could be more fairly decided upon to the impartial interest of each side of the conflict in the civil war, an important consideration to the historical value of the work. The plan of a board of publication has given satisfactory results in the War Department in the work of the Army War Records, a publication similar to our own.

In submitting the estimates for the next fiscal year, no increase in the regular clerical force of the office has been requested, with the exception of one item, viz, that of a laborer. The services of such a

man are indispensable for the proper distribution of the volumes. The estimate for the publication fund has been increased to the sum of $50,000, which figure is intended to cover the cost of the additional volumes for the next fiscal year, and also to establish a board of publication, as recommended in this report, and to provide for the cost of same, as well as to provide for the temporary expert clerical assistance required. It also allows for the increase of 1,000 copies in the quota of the Department. All of which is hereby respectfully submitted and recommended.

The work of collecting material for the Naval War Records has been continued during the past year, and many valuable papers have been obtained. The reports of the Union commanders are full and fairly complete. It is to be regretted, however, that the Confederate records are not equally complete, due to the great difficulty found in collecting them, and also to the fact that a large part of the archives of the Confederate navy department was burned at the close of the war. Frequent careful searches throughout various parts of the country, conducted by a special agent of the Department, have brought to light many duplicates of these papers, found among the personal files of participants. It is hoped that the publication of the first volume of the work will revive the interest of participants in the events referred to and bring additional material into our possession. The search for such matter is still being vigorously continued by this office.

Since my last annual report there has been added to the Department library 695 volumes. The small increase of books during the year has been due to decreased appropriations allowed us, Congress having appropriated for professional books and periodicals during the present fiscal year only the sum of $500. It is recommended that the estimate for this purpose be restored to $1,000, this amount being necessary to keep up the present high professional standard of the library, as well as to supply the Naval Intelligence Office with technical and professional information.

Very respectfully,

RICHARD RUSH.
Superintendent Naval War Records.

The SECRETARY OF THE NAVY.

OPERATIONS OF THE NAVAL MILITIA.

NAVY DEPARTMENT,
OFFICE ASSISTANT SECRETARY,
Washington, November 7, 1895.

SIR: I have the honor to transmit herewith the report of the operations of the Naval Militia during the past year, and to call your special attention thereto.

The organizations are growing rapidly and the public interest in them is steadily increasing.

This organization is founded entirely on the patriotic zeal of the citizens in the various State organizations, and is entitled to every possible encouragement at the hands of the National Government.

During the past summer I have made an inspection of certain of the divisions and battalions of Naval Militia in North and South Carolina, Maryland, Pennsylvania, New York, Connecticut, Rhode Island, and Massachusetts, accompanied by Lieut. A. P. Niblack, U. S. N., who is attached to this office, and was thus given an opportunity to inspect these organizations at their homes and enabled to form some judgment regarding their possibilities and wants. To make them at all efficient it is absolutely necessary that they be kept in close touch with this Department, and be aided, encouraged, and instructed in every possible way. In so far as they approximate to a naval force they are removed from the usual conditions of a land militia, and can not find the proper sympathy and encouragement in the circumstances surrounding the latter. This Department has done everything possible within the limits of the law to help these organizations, and takes great pride in their present strength and efficiency. Just at present they need, above all things, sufficient boats to perfect themselves in boat work.

Very respectfully,

WM. MCADOO,
Assistant Secretary.

The SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, October 15, 1895.

SIR: I have the honor to make the following report on the Naval Militia of the various States for the current year:

The naval appropriation act approved July 26, 1894, contained the following clause:

> Naval Militia: For arms, and equipments connected therewith, and for the printing of necessary books of instruction, for Naval Militia of various States, under such regulations as the Secretary of the Navy may prescribe, twenty-five thousand dollars.

The allotment of this appropriation was made under date of March 6, 1895, and the special circular on this subject issued by the Department contained the following paragraph:

> Five hundred dollars of the appropriation for Naval Militia will be reserved for the purpose of providing books of instruction for the Naval Militia. These books will be distributed among the various organizations in such manner as the Secretary of the Navy may from time to time direct.

This fund is still reserved for expenditure awaiting the publication of new editions of the most important technical books needed by the Naval Militia, as the older editions are exhausted.

The returns from the various States to March 1, 1895, of the strength of the Naval Militia, exclusive of commissioned officers, were received from the governors of thirteen States, as a basis of the allotment of the appropriation for 1894, as follows:

Name of State.	Petty officers and seamen.	Allotment.
Massachusetts	409	$3,718.18
Rhode Island	100	909.09
Connecticut	71	645.46
New York	387	3,518.18
New Jersey	216	1,963.64
Pennsylvania	167	1,518.18
Maryland	174	1,581.82
North Carolina	255	2,318.18
South Carolina	165	1,500.00
Georgia	52	472.73
California	313	2,845.45
Illinois	199	1,809.09
Michigan	187	1,700.00
Total	2,695	24,500.00

The new States to make returns and share in the annual allotment were New Jersey and Georgia. Laws have been passed in Virginia, Vermont, and Louisiana, but no returns have as yet been made from them to the Department. A law is being formulated in Ohio to present to the legislature of that State.

The following table contains for the different years the amounts of such allotments, and not only shows how the States which first organized their Naval Militia have naturally received the greatest benefits from the appropriation, but also clearly indicates that they will continue to receive disproportionate benefits from the National Treasury, as compared with the newly organized militia, unless the rule so far followed is changed:

State.	Fiscal year—				
	1891-92.	1892-93.	1893-94.	1894-95.	Total.
Massachusetts	$5,123.93	$5,190.75	$4,249.36	$3,718.18	$18,282.22
Rhode Island	1,178.16	871.70	1,164.80	909.09	4,123.75
Connecticut	.....	.....	657.90	645.46	1,303.36
New York	7,461.71	6,366.78	4,346.42	3,518.18	21,693.09
New Jersey	.....	.....	.....	1,963.64	1,963.64
Pennsylvania	.....	.....	2,113.87	1,518.18	3,632.05
Maryland	.....	1,382.39	1,315.79	1,581.82	4,280.00
North Carolina	2,203.60	3,572.74	1,650.13	2,318.18	9,744.65
South Carolina	.....	2,318.84	2,006.04	1,500.00	5,824.88
Georgia	.....	.....	.....	472.73	472.73
California	8,094.43	5,296.80	3,203.19	2,845.45	19,439.87
Illinois	.....	.....	3,548.32	1,809.09	5,357.41
Michigan	.....	.....	744.18	1,700.00	2,444.18
Texas *	938.17	.....	.....	.....	938.17

* No returns have been received from Texas since 1891.

This by no means represents the inequalities of benefits received. Under an act of Congress approved August 3, 1894, the Department has been able to loan to the governors of States for the Naval Militia such vessels, boats, and ship equipments as are not required for general service. Under this act the following-named vessels have been or are about to be loaned, viz: The *Minnesota* to Massachusetts, the *Wyandotte* to Connecticut, the *New Hampshire* to New York, the *Portsmouth* and *Ajax* to New Jersey, the *St. Louis* to Pennsylvania, the *Dale* to Maryland, and the *Nantucket* to North Carolina. Owing to the large sum of

money estimated as required to make the *Swatara* safe and habitable it was decided not to lend that vessel to California. The prospective supply of unserviceable vessels is so limited that it will be some years before it will be possible to furnish even an average of one ship to each seaboard State. At present there are no ships available without the expenditure of so much money to make them even safe and habitable that the present supply may be said to be exhausted.

Opportunities for a short cruise on a man-of-war were afforded very few of the Naval Militia organizations during the past summer, owing to the fact that the exigencies of the service required the presence of most of the ships of the North Atlantic Squadron either in foreign waters or where they were not available for such duty. Most of the organizations went into camp, and were either instructed for a few days on board a ship in attendance, or else improved the opportunity to familiarize themselves with boat work.

Three divisions of the Naval Militia of California were given a short cruise on the *Olympia* from June 12 to 18, the militiamen filling vacancies in the crew and participating in the regular routine of a seagoing man-of-war. The report of the board of officers, which is appended, does not seem to show that such short cruises are of real benefit to the Naval Militia.

The Maryland Naval Militia had a week's tour on the *Dale* early in July, the ship being towed to Tolchester, Md.

The First Naval Battalion of New York carried out a scheme of reconnaissance and distant-service boat work along the north shore of Long Island, making four preliminary cruises from Friday to Monday of certain weeks, beginning June 22. The fourth expedition, on July 14, reached as far as Shelter Island, where a camp site was selected. The annual tour began on July 19 and embraced a camping-out expedition on the site selected, with a general reconnaissance of Great and Little Peconic bays and their approaches. The torpedo boat *Cushing* was in attendance. The *Montgomery*, although expected, was unable to participate. However, the programme as it was carried out may very well serve as a model in many respects for all of the organizations.

During the period from July 20 to 29 the Second Separate Naval division, of Rochester, N. Y., made a most successful boat reconnaissance of the eastern end of Lake Ontario and the headwaters of the St. Lawrence River.

From July 15 to 20, inclusive, the naval militia of the State of Michigan were quartered at Fort Mackinac, and were incidentally exercised afloat on board the U. S. S. *Michigan*, which was in attendance. The old-fashioned armament of this vessel and the most promising growth of the naval-militia movement along the Great Lakes points to the necessity for either giving the *Michigan* a modern battery or replacing her by a modern ship.

The naval militia organizations of North Carolina, South Carolina, and Georgia were exercised and instructed on board the monitor *Amphitrite* during the period from July 22 to August 10. The report of the board of officers, which is appended, would seem to justify a change in the time of the annual tour to the spring or fall, as during the time selected this year the hot weather, combined with the undue heat of the ship, did much to lessen the interest of everyone in the work.

The Naval Militia organizations of Pennsylvania and Connecticut went into camp from August 17 to 24, the former at Augustine Park, on the Delaware River, and the latter at the State camp at Niantic, Conn. The uncertainty of the Department as to its ability to send ships for the tour of duty and the changing of dates necessary led in both organizations

to a low percentage in attendance, which should not be taken as an index of what may be expected if a definite date is fixed some time ahead.

The Illinois, New Jersey, and Rhode Island organizations did not have a tour of duty, largely due to local reasons.

There has been considerable diminution of enthusiasm in the older Naval Militia organizations, due largely to uncertainty as to the real purpose and aim of the naval-militia movement. The number of resignations, discharges, etc., clearly indicate this. Unless it is desired that the movement should drift on in an uncertain and halting way, with possibly ultimate failure, a vigorous State and national initiative should at once be taken. The question should be definitely settled as to where local aid may justly cease and the responsibility of the Department begin. Lack of uniformity in State laws and the tentative and experimental status of the whole question merit careful consideration.

To raise the Naval Militia into a dignified and reliable arm of the national defense, sound policy would seem to dictate the following initiative:

(1) The laws and regulations of all the States should be made more or less uniform in character, as relates to the Naval Militia.

The laws of such States as require annual tours of duty of the Naval Militia to be performed in the limits of the State should be modified so that the Department may be able by bringing three or four organizations into camp at a given region to provide ships during a definite period to cooperate with three or four main camps in succession. This would enable the Department to name a definite date for each tour of duty, provide ships, and arrange a systematic scheme of instruction. Definiteness in purpose, both State and national, is now necessary to prevent the great variance from year to year in the programme of the tours. It is believed that the bringing together of three or four organizations, with a squadron of ships in attendance to supplement the instruction, would result in increased efficiency, and give definiteness to the Naval Militia scheme, but the custom of embarking the Naval Militia on board during the entire tour is not considered desirable, except under special circumstances.

(2) The wording of the act making annual provision for the Naval Militia should be changed and the amount appropriated should be increased.

Boat work is of the utmost importance. The coast line should be divided into military districts for purposes of State and national military reconnaissance and information. Pulling cutters of navy pattern costing, when completely equipped for distant service, about $1,800 each (exclusive of the fieldpiece) will do a great deal more toward establishing the purpose of the Naval Militia than anything else. Under existing laws the Department is empowered to loan unserviceable boats, but there is no provision for equipping them. Signaling is of vital importance. Our Army and Navy have different codes, and in time of war it is a question as to how the forces would communicate with each other. In joint operations the Naval Militia would play an important part. Signal outfits should be allowed by law. The pay, transportation, subsistence, clothing, camp equipage, medical supplies, expense of armories, and in many States the cost of arms, fieldpieces, and accouterments, are borne by the State or by local and private subscription. An increase in the amount of the annual appropriation from $25,000 to $50,000, which is here recommended, is certainly a very small investment for the returns that may be expected in time of war.

(3) The outfits and requirements of the divisions of the Naval Militia should be standardized.

Each division of from 50 to 100 men should have as an outfit at least one pulling cutter of navy pattern with cone mount for a fieldpiece and fully equipped for distant service; one fieldpiece with field carriage, ammunition limber and accessories; one signal kit, one set of boat flags, one signal book, and one bugle. Each man should be equipped with two suits of blue uniform, two suits of white cotton or duck overalls, proper head gear, an overcoat, a canteen, haversack, knapsack, rubber blanket (poncho), woolen blanket, leggings, belt, and either service rifle and bayonet, or a revolver and cutlass. Each separate division or battalion headquarters should have a medical emergency outfit; ammunition for fieldpiece, service rifle, and pistol; a log book, copy of Navy Regulations and Articles of War, gunnery plotting tables, sailing directions and local charts, with tracing cloth, blue-print paper, etc.; and all standard drill books and information books on torpedoes, ordnance, gunnery, signaling, infantry and artillery, seamanship, boat work, camping out, field operations, and reconnaissance work. More than one boat and one fieldpiece should be issued to each division as they may become available, but the above represents what is at least required by a division to enable it to become efficient as far as it can by the efforts of its members. This, supplemented by training on board ship, will, with the zeal shown by the organizations, make of the Naval Militia an efficient military body, supplemental to the naval and seacoast defenses of the country, ready to volunteer in time of war for service in the auxiliary vessels of the Navy in which a local knowledge of the coast may be essential, or in the improvised defenses either on shore or afloat.

(4) The departmental regulations governing the apportionment of the annual appropriation should contain several new conditions.

One thousand dollars should be set aside for printing books of instruction, and of the remainder of the appropriation one-half should be allotted to the various States as now, on a basis of numbers enrolled. The other half should be allotted proportionally to the newer organizations and to those which have not as yet received the loan of a ship or ship's boats or arms and equipments. As the greatest difficulty is had in getting the adjutants-general of a number of the States to sign receipts and vouchers, to make annual return of stores, and to properly account for missing property, a provision should be inserted in the regulations by which all further transactions with the State shall be suspended by the Department till its regulations are rigidly complied with. Aside from the fact that the dilatoriness of certain States has the effect of keeping back for months the payment of moneys due the firms which furnish the arms and equipments, the care, preservation, and accounting for property is an important military duty, neglect of which speaks for itself.

(5) Steps should be taken to organize a naval reserve of officers, seamen, and ships under purely national auspices.

Ex-officers of the Navy and former enlisted men, members of the Naval Militia who have served a certain time and can qualify, and seafaring men generally should make up the personnel, and yachts and merchant steamers the matériel.

(6) The office of Naval Militia in the Department should be thoroughly and definitely organized.

The records are accumulating rapidly and the current work is growing. One officer can not now perform the military duties required and keep track of the stores, arms, equipments, etc., loaned the Naval Militia, amounting in value now to several hundred thousand dollars. A clerk at a salary of $1,200 per annum is respectfully asked for.

In consideration of the foregoing recommendations, it is respectfully submitted that this year's annual appropriation act should contain the following provision:

For arms, accouterments, signal outfits, pulling boats, the printing of the necessary books of instruction for the Naval Militia of the various States, and for one clerk at one thousand two hundred dollars per annum, under such regulations as the Secretary of the Navy may prescribe, fifty thousand dollars.

The reports of the officers and boards of officers detailed to inspect and report upon the annual tours of duty of the various Naval Militia organizations are herewith appended.

Very respectfully,

A. P. NIBLACK,
Lieutenant, United States Navy.

The ASSISTANT SECRETARY OF THE NAVY.

U. S. S. AMPHITRITE, SECOND RATE,
Port Royal, S. C., August 14, 1895.

SIR: In obedience to your order of the 23d ultimo, to report upon the efficiency of the Naval Militia of Georgia, South Carolina, and North Carolina, we have the honor to herewith submit our report.

THE NAVAL MILITIA OF GEORGIA.

(*a*) *Organization.*—Practically that for a ship of war; 56 men and 4 officers, of whom 80 per cent appeared on board for drill, etc.

(*b*) *Professional knowledge.*—With the exception of those belonging to the seafaring class practically nil, due to the lack of opportunity, doubtless, but they showed great interest, desire to learn, and aptitude.

(*c*) *Drill.*—Have had none whatever, except drill without arms in the infantry tactics and sword exercise, having been previously organized as a cavalry company of militia. Considering their lack of previous opportunity, etc., their drills on board were highly creditable.

(*d*) *Uniform.*—The "seamen" were uniformed in regulation blue service dress, with but slight modifications in device, etc. White working clothes had been ordered, but not yet received.

(*e*) *Efficiency as seamen, ship's artificers, and firemen.*—The ship was not under way, and there was no opportunity of judging.

(*f*) *Readiness and availability to man a ship of war.*—As ready and available as any other State militia.

(*g*) *Class of men composing the organization; proportion belonging to seafaring class.*—Drawn from all classes; about 18 per cent from seafaring class.

(*h*) *Number who have served in United States Navy*—None.

THE NAVAL MILITIA OF SOUTH CAROLINA.

(*a*) *Organization.*—Practically that of a ship of war, composed of three divisions, one each from Beaufort, Charleston, and Mount Pleasant, near Charleston; 90 men and officers reported on board, about 20 per cent of the battalion being absent.

(*b*) *Professional knowledge.*—With the exception of those belonging to the seafaring class, practically nil, due, doubtless, to lack of opportunity, but they showed great interest, desire to learn, and aptitude.

(*c*) *Drill.*—Have had opportunity only to drill with small arms. In this the Beaufort division did decidedly well, the Mount Pleasant division fairly well, and the Charleston division poorly.

(*d*) *Uniform.*—The State militia uniform converted as nearly as possible into the navy uniform, is in our opinion unsuitable, especially for the seamen and petty officers.

(*e*) *Efficiency as seamen, ship's artificers, and firemen.*—The ship was not under way and there was no opportunity of judging.

(*f*) *Readiness and availability to man a ship of war.*—As ready and available as any other State militia.

(*g*) *Class of men composing the organization; proportion belonging to the seafaring class.*—Drawn from all classes, but of the Beaufort division, 20 per cent seafaring; Mount Pleasant, 34 per cent; Charleston, 8 per cent; an average for the battalion of 21 per cent.

(*h*) *Number who have served in the United States Navy.*—None.

THE NAVAL MILITIA OF NORTH CAROLINA.

(*a*) *Organization.*—Practically that of a ship of war, including firemen and engineer officers; composed of three divisions, one each from Wilmington, Elizabeth City, and Kinston. Only the Wilmington division and some of the officers of the Kinston division reported on board. The Elizabeth City division has only just been organized and is not yet uniformed. About 44 men and their officers reported on board for drill. The total number was asked for but was not furnished by the officer commanding, so that it is impossible for us to report the total number.

(*b*) *Professional knowledge.*—This battalion manned and officered the *Nantucket*, bringing her down from Wilmington to Southport, and remaining there for five days, and from an observation of this performance we can say that it was done in a highly creditable manner.

(*c*) *Drill.*—Drills were held on board the *Nantucket* under the direction of their own officers and were very creditable.

(*d*) *Uniform.*—The officers in regulation navy blue service dress, the only variation being in the device and stripes (color); the men in white working clothes, all very suitable. Blue regulation clothes had been ordered for the men.

(*e*) *Efficiency as seamen, ship's artificers, and firemen.*—Judging from the performance of the *Nantucket*, highly creditable.

(*f*) *Readiness and availability to man a ship of war.*—As much so as any other State militia.

(*g*) *Class of men and proportion belonging to the seafaring class.*—Drawn from all classes. In order to report proportion belonging to the seafaring class the necessary data was repeatedly asked for, but was not furnished, so that it is impossible for us to report upon this point.

(*h*) *Number who have served in the United States Navy.*—This information was also asked for but not furnished, but we know that the commanding officer of the battalion is a commissioned officer of the Navy on the retired list and the boatswain is an ex-apprentice.

SUGGESTIONS.

(*a*) We are of the opinion that it is strongly advisable to detail a regular officer of the Navy to conduct and supervise the drills, etc., of the organizations of these three States.

(*b*) We think the climate highly unsuitable for drilling during the summer season, the effects of the excessive heat tending to destroy much of the interest which would otherwise be shown and which is so necessary to an efficient performance. During the spring or fall much more effective work could be done.

Very respectfully,

JOHN W. STEWART, *Lieutenant, U. S. N.*
F. J. HAESELER, *Lieutenant, U. S. N.*
W. A. MOFFETT, *Ensign, U. S. N.*

The COMMANDING OFFICER.

U. S. S. AMPHITRITE, SECOND RATE,
Port Royal, S. C., August 16, 1895.

SIR: I have the honor to report that the duty assigned me under the Department's instructions of the 17th ultimo was completed on the 8th instant, and I have the honor to transmit herewith the report of the board of officers detailed in accordance with the said instructions.

The *Amphitrite* arrived at Brunswick on the 22d ultimo, and the Naval Reserves came on board the following day and were stationed at main and secondary batteries; two days were devoted to their instruction, and being a very intelligent body of men, they were sufficiently instructed, so that I deemed it desirable to allow firing from the secondary battery at targets planted on each bank of the river, giving very good results. They were also instructed in the Lee magazine rifle, broadswords, signals, and various other drills about the ship. They were uniformed in service blue, their organization being of course more military than naval; but they were enthusiastic and evidently have great pride in their naval work, and give promise of being a very valuable auxiliary.

Leaving Brunswick on the 28th, I arrived at Charleston on the afternoon of the 29th, finding the Reserves awaiting our arrival. The adjutant-general of the State accompanied them. They wore the State uniform. They were regularly assigned stations as part of the ship's company, and three days were devoted to their instruction in boats, signals, and main and secondary batteries, but I did not deem it prudent and desirable to attempt any target practice.

Leaving Charleston on the 1st instant, I arrived at Southport on the afternoon of the 2d, but deemed it not prudent, under the conditions of engines, boilers, swinging room, and an unhealthy situation, to continue to Wilmington, and as I was informed that the *Nantucket* was to come to Southport for exercise, which she did, arriving on the 4th. I detailed two officers to observe the Naval Militia whilst running the ship. It speaks well for their efficiency, skill, and patriotic enthusiasm when they man and run the vessel at their own expense. Their organization seems well able to man and handle a man-of-war, and the only use we could be to them was instruction in the main and secondary batteries and signals with search and electric signals. They were enthusiastic and apparently in good shape as an auxiliary to the Navy.

It is a pleasure to bring to the notice of the Department the very cordial receptions afforded us, not only by the citizens and their official representatives, but also by the Naval Militia at the ports visited. Their zeal, eagerness to learn, intelligence, and strong desire to add to the effective force of the country were gratifying, and there is no doubt that our visits and work have stimulated a good feeling for the service, and I trust that this feeling will be cultivated by such assistance on the part of the Department as to bring their organizations up to a high state of efficiency as auxiliaries. To do this I believe that naval officers should be detailed as instructors or assistants. It is an anomaly, to speak mildly, that a cavalry officer is the inspector of a naval organization, as was the case at Brunswick.

May I suggest to the Department that very effective and good work could be done with these organizations if they were put on board of a small cruiser and sent to sea for a week; could not the *Bancroft* or the *Lancaster* be utilized for this service with a commanding officer and a few seamen, the rest of the ship to be manned by the Reserves? This would solve the problem of inspections, increase their efficiency, and give the service the benefit of their interest and support.

Having completed this duty in connection with the Naval Militia on the 9th instant, I left Southport on the 10th and proceeded to Port Royal, S. C., arriving on the 12th for the purpose of testing the new dry dock.

Very respectfully,

W. C. WISE, *Captain Commanding.*

The SECRETARY OF THE NAVY.

U. S. S. MICHIGAN,
Mackinac Island, Michigan, August 12, 1895.

SIR: In obedience to your order of July 12, 1895, we have the honor to make the following report of the efficiency of the naval militia of the State of Michigan in their annual drill on board this vessel, July 15 to 20, inclusive:

Camp was established under command of Lieut. Commander Gilbert Wilkes, M. S. N. B., there being present 9 commissioned officers, 18 petty officers, 63 enlisted men from Detroit, and 2 officers, 8 petty officers, and 28 men from Saginaw.

Quarters belonging to Fort Mackinac, recently ceded by the United States to the State of Michigan, furnished ample accommodations and were admirably suited for the purpose. A regular guard was established, and the routine of the camp began on the afternoon of July 14.

The exercises afloat began on Monday, July 15, embracing everything required of a ship's company.

On Tuesday morning, July 16, an inspection of the battalion by Lieut. Commander B. S. Richards, U. S. N., and the members of the board, took place at the fort, also a drill in closed and extended order. The battalion presented a very creditable and efficient appearance, equipments new, and armed with Hotchkiss rifle, caliber .45, model of 1885. They have no knapsacks, haversacks, or canteens, the rifles and outfits having been purchased at their own expense. They were all well and properly uniformed in blue, with leggings. The drill in closed order was good, in extended order fair. The quarters were inspected, found to be kept in good order, and the messing arrangements excellent.

In the exercises on board ship, while a number of the men had not been afloat before, the senior officers and leading men seemed to understand their duties very well, the others giving so much attention to the instruction as to attract our warm commendation, the improvement from day to day being so marked that it is to be regretted the period of instruction was limited to a week.

On the afternoon of July 20 the battalion was inspected and exercised in closed order by the inspector-general of the State of Michigan. It was a most creditable drill. Although the officers and men had been hard at work for a week they showed a steadiness and spirit which would have done credit to regular troops.

The rifle range at the fort was in constant use, firing taking place at 200 yards, a detail being made for target practice each day. On the afternoon of Friday, July 19, quite a number of men gave up their liberty so as to have an opportunity of firing at the target. The average score was 37.04 out of a possible 100.

At great-gun practice the score plotted on the standard navy target was 8 per cent of the possible total, without time allowance. The average score of the last three practices of this vessel has been 18.7 per cent, under the same conditions.

In professional knowledge we would class them as follows: Senior officers, excellent; junior officers, fair; chief petty officers, excellent; other petty officers, good; enlisted force, fair; organization as infantry battalion, excellent; as ship's company, good.

Drill.—Considering the opportunities they have had, their proficiency is excellent in infantry and good in other drills.

Proficiency as seamen.—Of the men so rated, is good. No one is rated seaman who has not passed an examination. It will be noted that most of the men are rated landsmen.

The engineer force was not organized owing to the absence of the chief engineer, who has had fourteen years' experience as an engineer officer in the United States Navy.

Artificers.—The board has no information as to their efficiency.

Readiness and ability to man a ship of war.—The board is of the opinion that thirty days after embarkation on board of a ship of war, with a complement of 125 men and officers, the force would be in effective fighting condition and do creditable service in action.

Previous naval records of the members of this command.—Gilbert Wilkes entered Naval Academy in 1877; resigned as ensign in 1890. Herbert J. Higgs passed through apprentice course. L. D. Alden, Q. M. 2d C., passed through apprentice course 1888–1892.

In conclusion, we wish to state that the discipline of this organization, many of them friends and social equals, attracted our attention and commendation, not a single case of disrespect or insubordination coming under our observation. They are animated with patriotic spirit, zeal, and an eager desire to learn their duties.

The battery of this vessel is antiquated, the guns being mounted so low as to cause the captains to assume cramped positions in sighting, which interferes materially with the firing, many of the shots going over the targets.

It is earnestly recommended that a few rapid-fire guns be supplied this vessel in case the Naval Militia are again sent on board for instruction.

Several members of this organization having expressed a desire for instruction in the use of auto-mobile torpedoes, it is respectfully recommended that an annual course of instruction for one month be given at the torpedo station, Newport, R. I., to those of the Naval Militia who may volunteer for it at their own expense.

We are, sir, yours, respectfully,

WM. C. BABCOCK, *Lieutenant, U. S. N.*
E. A. ANDERSON, *Lieutenant, U. S. N.*
CASEY B. MORGAN, *Ensign, U. S. N.*

The COMMANDING OFFICER, U. S. S. MICHIGAN.

U. S. S. OLYMPIA, FIRST RATE,
Navy-Yard, Mare Island, Cal., June 21, 1895.

SIR: In obedience to your order of June 13, 1895, we have the honor to report:

1. In regard to the workings of the battalion of the naval reserve of the State of California while on board the *Olympia* for "instructions and drills."

On the afternoon of the 12th of June three companies, amounting in all to 107 men and 7 officers, reported on board the vessel with muskets, blankets, haversacks, canteens, and tin cups. Lieutenant-Commander Stahl, the senior officer of the battalion, did not present himself until the arrival of the ship at Santa Cruz the evening following.

The men of the three companies were entirely unprovided with mess gear, provisions, or any outfit other than that mentioned above.

They were received on board, assigned to the gun and powder divisions, and given station billets, but were berthed and messed by themselves.

Thirty men of the regular ship's company were left on the receiving ship, and the vacancies thus left, together with those caused by men in the hospital, on the sick list, and vacancies in the complement, were filled by the men of the Reserve; the remaining men were assigned proportionately as supernumeraries. Chief petty officers were detailed as duplicates of the corresponding ratings of the regular crew and did duty with the latter. The officers were assigned equally to the divisions with their companies, and accompanied and assisted the regular officers.

Hammocks and bags were furnished by the ship. Cooks were appointed from their own men, and rations were also served out from the ship. After the first few days the rations were supplemented by fresh provisions purchased by the Reserves from their own funds.

The following day ten more men reported on board and were stationed. All were then instructed by the ship's officers during the morning in great-gun nomenclature, stations, and working of the battery; in the afternoon, owing to the motion of the ship on her way to Santa Cruz and the consequent indisposition of the Reserves, no drill was possible.

In the evening a number of their officers and men went on shore to view the carnival festivities and attend at the mustering in of a new company of the battalion.

During the forenoon of June 14 they were exercised at divisional great-gun drill, and in the afternoon the whole battalion was landed under arms to take part in the parade on shore.

In the forenoon of Saturday, June 15, exercised at fire quarters, and the men were instructed and drilled in closing water-tight doors, etc. In the afternoon the Reserves were taken in squads throughout the vessel, including the dynamo room, torpedo rooms, and passing rooms, ammunition rooms, steering room, and other compartments. They were also shown the arrangement of storerooms, and instructed in the stowing of the hold and the tiering of chains in the lockers. On Sunday, the 16th, the ship returned to San Francisco, where in the evening all but 27 men and 2 officers left the ship to resume their shore vocations.

On Monday, the 17th, three new men reported and those on board were exercised at boat drill under oars, and miscellaneous stations and duties, including torpedoes. In the evening a practical lesson was given the working of search lights. On Tuesday morning the exercise in boats was repeated and in the afternoon all the Naval Reserve left the ship.

In addition to the above regular drills the men took the regular stations of their numbers in evolutions, such as coming to anchor, getting under way, in and out boats, etc., and, although the large number of visitors occasionally shortened the drills, even the apparently idle time was utilized in picking up a knowledge of ship life and duties.

The men showed aptness, and, from the readiness with which they grasped the details of the drills after the necessarily limited instructions, showed good matériel. The desire to learn and the attention to duty of both officers and men was good, but the lack of organization on a basis of ship's duties and a general haziness as to the object of both the Naval Reserve and its cruise and requirements was apparent, and the attendance of the ship at the Santa Cruz carnival rather increased the latter.

With the exception of a few officers and men who had followed the sea, there was a lack of professional knowledge, due in great measure to the want of opportunity.

The discipline was good, and the uniforms and accouterments in fairly good condition.

The length of their stay on board was not sufficient to accomplish any lasting benefit, and the dependence on the ship and her regular crew was evident. The lack of preparation for a stay on board was the more marked in view of a previous although not exactly similar experience on the *Charleston*.

(2) In regard to recommendations and suggestions for future guidance to obtain the most satisfactory results in the way of drills, messing, berthing, watching, etc., we submit the following:

First. It is recommended that a ship's organization as regards berthing, messing, boats, and divisions be substituted by the Naval Reserve for the present system of companies, and that for this purpose a ship or even a hulk be substituted for shore armories.

Second. That they prepare themselves by exercise with boats, tackles, compasses, anchors, signals, guns, etc., for ship life, and by frequent drill, according to the above organization and exercise, avoid the delay and loss of time incident to learning this on board the naval vessels and aid in reaping the full benefit of the necessarily limited time annually devoted to cruising.

Third. That ample notice be given them of a contemplated cruise to enable them to make the necessary arrangements, and that the full time on board be devoted to drilling and cruising.

Fourth. That the ship detailed receive ample notice to make preparations, such as depositing a portion of her crew, preparing station billets, increasing the messing facilities, and preparing a schedule of drills.

Fifth. There are three principal systems of incorporation in the ship—as duplicates of regular members of the crew, as recruits to fill vacancies, as separate units of the ship's organization; and it is probable that a combination of the three systems, in the nature of steps, will prove the best.

A proper understanding of the scope and object of the Naval Reserve is the key to its proper organization and this, in our opinion, is threefold:

(1) Assisting in the defense of inner harbors and coast line in shoaler waters.

(2) Assisting or initiating offense or sallies within easy retreat.

(3) To form a reserve from which to draw for the Regular Navy vessel.

Incidentally, the popularization of the Navy. By this is understood the bringing before the public the objects and uses of a navy, and in reaching the masses by bringing a number of zealous, enthusiastic, patriotic citizens in more intimate contact with it.

That all these can be carried out is believed possible, and it only requires a proper organization.

The division of the coast line of a State into sections; the assignment of the sections to the nearest units of the battalion; a distribution of charts; a study of these and of uncharted waters; exercises at mobilization, alone and in conjunction with the Navy; exercises in the navigation, handling, and piloting of boats, laying mines and countermines, the rigging and placing of booms and fire rafts or boats, the establishment of signals along the coast and with vessels at sea, exercise as picket and scout boats—all these can be practiced during the year; and by previous arrangement with the ship detailed these can be added to or combined with the ship drills, and in time not only a reserve but a valuable adjunct will be created.

Very respectfully,

E. W. STURDY,
Lieutenant Commander, U. S. N.
T. S. PHELPS, JR.,
Lieutenant, U. S. N.
A. C. DIEFFENBACH,
Ensign, U. S. N.

Capt. J. J. READ, U. S. N.,
Commanding U. S. S. Olympia.

[First indorsement.]

U. S. S. OLYMPIA, FIRST RATE,
Navy-Yard, Mare Island, Cal., June 23, 1895.

Approved, and respectfully forwarded to the Honorable Secretary of the Navy.

The limited time allotted for instruction and drills to be given to the Naval Reserve prevented any extended course of exercises, yet I observed a zealous desire of both officers and men to learn all that possibly could be obtained in the short space of time they were on board.

The officers were an intelligent and gentlemanly body of men, and the noncommissioned officers and privates, in point of intelligence and physique, exceeded my expectations. Their conduct while on board was most excellent; and it was a noticeable feature that they took to the regular navy rations like veterans.

J. J. READ,
Captain, United States Navy, Commanding.

NAVY DEPARTMENT,
Washington, D. C., September 1, 1895.

SIR: I have the honor to submit the following report on the annual tour of duty of the First Naval Battalion of the militia of the State of New York:

In obedience to the Department's orders of July 19, I proceeded to Shelter Island, N. Y., and arrived at the battalion camp on July 21, remaining there till camp was broken July 25.

As announced in a special order by the adjutant-general of the State of New York, under date of June 10, 1895, the object of the summer tour of the Naval Militia of the State was based upon the assumption that a foreign war was imminent and that it was essential, prior to hostilities, to obtain a thorough knowledge of one or more of the approaches to New York. It was aimed incidentally to give both officers and men experience in practical along-shore work, the preparation of a war map, and experience in signaling and reconnaissance work. In carrying out this idea the eastern end of Long Island Sound was assigned to the First Naval Battalion and a portion of the shore of Lake Ontario to the Second Separate Division (Rochester, N. Y.). The study of these two regions was to include the selection of sites for permanent signal stations and camps. In going into the field to carry out this programme authority was granted the commanding officer of the two forces to excuse any and all officers and men who had served six days in the field in boat reconnaissance work prior to the date set (July 20).

The First Naval Battalion of New York left the U. S. S. *New Hampshire* at New York on the steamer *City of Lawrence* Friday, July 19, in company with the steamer *C. E. Emmons* as tender. The battalion was landed Saturday morning at West Neck, Shelter Island; "Camp McAlpin" was established and routine began at 8 a. m.

Saturday, Monday, and part of Tuesday were spent in reconnoissance work by boat parties in pulling boats and by the commanding officers and staff in the tender *C. E. Emmons*. The shore line was examined from Gardiners Bay to the head of Little

Peconic Bay, and incidentally specific locations were examined and special information collected for the Naval War College. A good feature of this work was the writing up of the information smoothly in the evening on return to camp while the notes and impressions were fresh in the mind. It also facilitated the reexamination of certain regions to verify notes or readjust certain differences in reports of boat parties.

As a result of the information obtained reports have been forwarded to the Department since the cruise, together with maps and sketches made on the ground, all of which will be extremely valuable in case of future hostilities. Long Island Sound and adjacent territory has been divided by the battalion into military districts as shown on blue prints attached to the reports, and reference made readily to the reports by indexing them according to the sections or districts. Too much can not be said in praise of this feature of the work of the First Naval Battalion.

On Monday evening the torpedo boat *Cushing* arrived, and on Tuesday all the torpedo crews and officers of divisions were taken out successively and instructed in assembling and firing Whitehead torpedoes. On Wednesday the chief petty officers and several commissioned officers of the battalion staff spent the day on board the *Cushing* under instruction. On this day the battalion was landed by divisions at different points on the south shore of Great Peconic Bay, and by marching in extended order a junction of the four divisions was effected on Shinnecock Heights. On Thursday morning camp was broken and nine boats' crews were towed out into Long Island Sound and given boat drill, after which the boats made the best of their way up the Sound, each divisional commander having orders to proceed as far as practicable under sail or oars, leaving the boats in charge of boat keepers and going by rail to New York so as to reach the *New Hampshire* by Sunday noon. Sensational articles appeared in the daily papers about the failure of this boat expedition, but the programme was really carried out as planned.

The site of the camp on West Neck was selected by a boat party sent out from New York early in July. It was near the center of the working ground, had a good beach for manning boats and for bathing, and was far enough from the nearest town to escape the usually too frequent visitors. The soil was sandy and the fresh water from driven wells was wholesome; but unfortunately the lagoons which are so prevalent in the neighborhood of Shelter Island and Peconic Bay made it impossible to find a camping ground on the beach which was not more or less malarial and badly drained. The medical officer of the battalion quite properly reported against the site selected. It speaks well for the physical condition of the battalion, which is made up of an unusually athletic set of men, that no sickness occurred in the camp, probably on account of the hardened physique of most of the officers and men. Strategically the location of the camp was excellent, and as no bad effects physically resulted the anticipations from the unhealthiness of the site were not realized.

The battalion camped by divisions along the beach with the boats moored abreast the divisions to which they belonged. The boat work of the battalion was of the highest order. Too much can not be said in praise of the spirit in which this feature of the work is now carried out. The battalion has been hardened physically by it, and the value of the information collected by the longshore reconnaissances is such that it offers a great field for the expansion of the work of the Naval Militia in this direction. The signal corps was particularly efficient. The commissariat and quartermaster arrangements were good, and reflect credit on those in charge. The hospital facilities were excellent and complete in every detail. The chief petty officers are a particularly efficient set of men. In view of the generally tentative state of the question of infantry and artillery drills both in the Army and the Navy, the many shortcomings of the battalion in the manual, guard mounting, guard duty, and battalion drill may not be taken as an index of a purpose to slur this feature of the training. The *New Hampshire* as an armory is not a good place for infantry drills, but nevertheless guard duty may be taught there and certain tendencies in the battalion corrected. The faults are essentially those of the Navy. Sailors consider that all their surface indications should be exaggeratedly unsoldierly. This is a tradition of the service. Unquestionably the duties of a sailor on board ship do not conduce to military erectness and bearing, but for all that, the despised surface indications of the military spirit are really the military spirit. The man who learns to hold himself well, to salute properly, and to absolutely check his animal spirits on duty has the military spirit, whether or not he knows any of the details of the profession. The checking of animal spirits at the right time is as important as having animal spirits under privations and adverse circumstances. The discipline of the battalion is, however, so good that with increased efficiency in guard duty and with the introduction of the new infantry and artillery instructions the New York Naval Militia will take its place as a model organization.

A brief review of the past annual tours of duty will show the relation of this year's work to the general scheme of the Naval Militia question as it seems to be shaping itself. In 1890 the battalion drilled and received instruction on board the

receiving ship *Minnesota*. In July, 1891, the battalion was quartered for a few days on the *Minnesota* and received instruction on the vessels of the squadron of evolution in the North River, and embarking on the steamer *Stonington* cooperated with the Naval Brigade on Fishers Island and had target practice at sea on board the vessels of the squadron. In 1892 the divisions drilled on board the *New Hampshire, Chicago,* and *Atlanta*. In 1893 a departure was made by drilling on board of the *New Hampshire*, which was towed to Cold Spring Harbor, Long Island. In 1894 the divisions spent a week on board the *New York* and *San Francisco* at Gardiners Bay, Long Island. It will be seen that hitherto a good deal of man-of-war training has been had in the brief time allotted each summer, the idea being to train the Naval Militia as a ship's company for a reserve in time of war. The programme this year marks somewhat of a departure from this idea, as in effect the duties which were assumed are very much those of a force halfway between the practical functions of the Army and the Navy. In a country with a long stretch of defenseless seacoast and a handful of cruisers as a fleet, any promise of usefulness in its defense is so gratifying that there is room for any organization which is military and efficient. The assured success of the Naval Militia movement points to the importance of the organization of a Naval Reserve under purely national auspices.

Very respectfully,

A. P. NIBLACK,
Lieutenant, U. S. N.

The SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, October 15, 1895.

SIR: In obedience to the Department orders of July 19, I reported to the commandant of the navy-yard, Boston, Mass., on July 26 and was assigned to quarters on the receiving ship *Wabash* in connection with the annual tour of duty of the Massachusetts Naval Militia.

The brigade came on board the *Wabash* on Monday, July 29, and went on shore on Saturday, August 3.

Of the 48 officers on the rolls 41 were present, and of 429 men 335 were present. The average attendance of officers was 85 per cent, and of the men 78 per cent. All of the men and a few of the officers were quartered on the *Wabash*, and the remainder of the officers and the band were quartered on the *Passaic*. The tug *Iwana* and the steam launch of the *Wabash* were also placed at the service of the brigade to assist in carrying out the programme of the tour. The Department had notified the State that the *Raleigh* and one other man-of-war would be in Boston for the first three days of the tour, but only the *Raleigh* was present, and she left early Thursday, August 1.

This year's tour of duty of the Massachusetts Naval Militia was a mild test of the ability of the brigade to man a ship of war, as it was thrown on its own resources on board the *Wabash* as a ship's company, with freedom to arrange a programme and carry on a ship's routine. With a ship lying at a dock, with commissariat difficulties easily solved, and handling ship not a factor the test was not severe, but was on the other hand very instructive. Heretofore the ships on which the brigade has served in detachments have been regular cruising ships, with everything running like clockwork. There was therefore naturally a noticeable lack of force and lack of confidence on the part of the officers of the deck and the petty officers, due to being thrown for the first time on their own resources. In the main the feeling throughout the brigade was at the end of the week one of considerable discouragement at the enormity of the undertaking of mastering the details of the naval profession in a week's tour each year under constantly varying conditions, with new types of ships, new guns, practically no books of instruction, uncertainty as to the purpose of the Naval Militia, and no adequate programme of preparation during the intervening months. The week's tour illustrated the futility of the past system, and argues most forcibly for the inauguration of a new one. The great value of a ship like the *Minnesota* will be in the preliminary training given in preparation for the tour of duty. It will overcome at least one difficulty.

There was much to commend in the organization and in the manner in which the officers and men bore themselves. The plan of sending a detachment every evening down the bay to pitch camp and return by breakfast next morning was an excellent lesson in naval brigade operations. The engineer force showed up particularly well in its work and should be developed into a division. The small-arm target practice was in some respects phenomenal. The great-gun target practice on the *Raleigh* under way at sea was not remarkable because the 4-inch R. F. gun and mount was a new arm and hard to learn in so brief a period as allotted for instruction. The light artillery drill was excellent, the boat work was fair, and the torpedo work very good.

In the way of criticism too much emphasis can not be placed upon the need of better setting up, more attention to uniform, and a general bracing up on guard duty. The sentry duty was an utter misrepresentation of the many commendable things in infantry tactics. The tan shoe, the stars on staff officers' sleeves, and citizen's ties with uniform were marked departures from naval custom.

As suggested previously in my reports, one or more men-of-war, preferably of the coast-defense type, should be in attendance at the annual tour of duty to cooperate with the Naval Militia and afford instruction to them. It is not thought that the custom sometimes followed is productive of sufficient benefit to warrant its continuance, viz, of making vacancies in the regular complement of the ships by the transfer of men to the receiving ships and filling their places with naval militiamen for the period of the tour. At certain stages in the development of an organization this may be valuable, but the tour of duty is so short that it is thought that mere instruction on board, coupled with camp life on shore, will accomplish more in the period assigned. It is not possible to make seamen out of raw material by service for one week a year on board cruising ships more or less in port, and a national reserve of seamen can not thus easily be created. Special steps must be taken in this direction under Government auspices entirely and without State aid.

The real field of the Naval Militia would seem to lie through liberal State and national aid in encouraging yachtsmen and landsmen of aquatic tastes into following those branches of naval training which will fit them to man the auxiliaries of the national defense in time of war, supplemental and incidental to the Navy and seacoast defenses; to do service, for instance, in improvised batteries and torpedo boats, or with mine fields, transports, supply vessels, telegraph steamers, repair ships, scouts, commissary vessels, floating batteries, improvised cruisers, naval brigade operations, prize crews, cartels, hospital ships, etc., where seamen pure and simple are not required, but in which properly trained landsmen are better than merchant sailors and in which a large part of the effective force of the Navy would otherwise be absorbed.

Unquestionably many of the officers and men in the Naval Militia are already qualified for service in the Navy, particularly those who have had previous naval service; but it would seem that these, together with the more proficient members who have had five years' training and can qualify on examination, should be incorporated in a true naval reserve under purely national auspices. The Naval Militia as now organized is a State organization, and its best training would seem to be along the lines of the land militia at first, but, in addition to a knowledge of infantry tactics, field artillery, and camp life, the Naval Militia should be expert in naval brigade operations, army and navy signaling, handling boats under steam, oars, or sail; shore line and field reconnaissance work, coast piloting (especially local knowledge), submarine mine work, automobile and dirigible torpedoes, secondary and great-gun artillery, and such knowledge of seamanship and man-of-war duties as can be obtained through the facilities provided by the Department in the instruction afforded on board ship.

A study of the possible defenses of Boston is of great importance to the Massachusetts Naval Militia, but, in view of the national importance of Nantucket Sound as a strategic center, and of the many local complications which beset the Naval Brigade in a tour of duty near that city, a radical departure should mark the next tour of duty in this State. It would be of the greatest benefit to the Naval Militia movement in general, and to that in Massachusetts in particular, if the next summer's tour were had in Barnstable County along the south shore, with headquarters in Chatham Roads. Camp should be established at some point selected and a few ships of the Navy should cooperate with them, as a study of this region is of the utmost importance to the Navy. It is urged, in view of the short period (one week) allowed the Naval Militia, that labor be employed by the State to transport and handle the camp equipage, as the manual labor is of no military value to the Naval Militia and absorbs too large a percentage of the limited time in the field.

Very respectfully,

A. P. NIBLACK,
Lieutenant, U. S. N.

The SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, October 15, 1895.

SIR: In obedience to the Department's orders of August 16, I proceeded to Delaware City, Del., in connection with the annual tour of the Pennsylvania Naval Militia, and was with that organization from August 17 to 21, inclusive.

As announced in orders from the First Naval Battalion Headquarters, "No United States vessel being available this year for the purpose of training the Naval Militia

of Pennsylvania, the summer tour of duty of this battalion will consist of eight days' service in camp at a point on the Delaware suitable for maneuvers along shore and in boats." The point selected was Augustine Park, Delaware, about 41 miles below Philadelphia.

Camp was established on Saturday, August 17, the First Battalion being joined by Division A of the Second Battalion from Pittsburg. Of the total, 89 in the latter, only one officer and one man were absent. The percentage of attendance in the two divisions of the First Battalion was very low, many arrests were made of delinquent members in Philadelphia, and the routine of the camp was much broken into by the going and coming of arrested and excused members.

The State authorities fixed the day of their inspection for Monday, August 19 (practically the second day in camp), which necessitated duties and exercises on Sunday in preparation for it. The State inspector, in his report to the adjutant-general of the State, says:

"There was but a poor attempt made at battalion drill, due to ignorance on the part of the officers with battalion movements. The boat drills which were taken part in by the First Battalion only were but fair. The small number of men on the rolls of the divisions of the First Battalion, proportion absent without proper excuse, and the fact that a number of those present were brought down under arrest are indications of a serious lack of discipline in this branch of the National Guard. In fact, in no way at present is it commensurate in efficiency to the very large amount of money which it has cost the State to establish and maintain it."

The uncertainty of the date of the tour, due to the inability of the Department to definitely state whether or not a man-of-war would be available for the annual tour of duty this year, accounts very largely for the absentees. These local criticisms, however, show the necessity for a better understanding of the delicate position in which the Naval Militia organizations are placed between the cross fire of State and governmental criticism. Aside from the manifest disadvantage an organization labors under in being inspected so early in its tour, the difference in the army and navy infantry and artillery tactics is a fruitful source of misunderstanding from the start. It is earnestly to be hoped that all American military forces may soon use the same tactics, guard manual, signal code, fieldpieces, and service rifle and revolver. It would seem natural that the Army should be the best judge of infantry, artillery, and guard manuals.

The Army and Navy have a different signal code and a different caliber and type of service rifle. It is said in criticism of both service rifles that for the militia the enormous point-blank range and penetration unfit it for use in street riots as killing innocent people at a distance. This objection is not well founded, for ammunition of an especial type, with small charges of powder, may easily be obtained. The price of the new navy rifle is to be about $20. In the interest of the militia, as well as on broader grounds, it would be well if the War and Navy Departments would settle as soon as practicable, by competitive tests, which is the better weapon, that of the Army or the Navy, and stop at once the manufacture of the less desirable arm. In the question of the same signal code for all services, the Army used the present Navy code for about twenty-five years with the greatest success. When a change was made the Navy followed, but after a fair trial was compelled to abandon the present Army code and go back to the original code. The Navy can not use the present Army code. The Army can use and has used the present Navy code.

The camp of the Naval Militia was admirably laid out and well selected strategically, as it was just below Reedy Island. It was well policed and the guard duty was creditably performed. The commissariat was efficiently managed and reflected credit on the paymaster in charge. The medical staff was thoroughly efficient and the field medical outfit was satisfactory. The many things which were not what they might have been in the way of smartness on drill, knowledge of boats, and a certain tendency to regard the tour of duty as a holiday, are faults which are easily corrected when certain local difficulties are overcome. The spirit animating the organization is distinctly enthusiastic. For every dollar the State and Government appropriate for the Naval Militia value will surely be received, if a definite aim is given the Naval-Militia movement. Boats, field artillery, and books of instruction are sorely needed. The men as a body are as fine a set physically and otherwise as may be found anywhere.

A naval vessel in attendance during the tour of duty would have added enormously to the value of the annual tour of this organization.

Very respectfully,

A. P. NIBLACK,
Lieutenant, U. S. N.

The SECRETARY OF THE NAVY.

NAVY DEPARTMENT,
Washington, October 15, 1895.

SIR: In obedience to the Department orders of August 16, on completion of duties in connection with the Naval Militia of Pennsylvania, I arrived on August 22 at the State militia camp at Niantic, Conn., where the Naval Militia division from New Haven was carrying on its annual tour of duty. On August 18 the division embarked at New Haven in four cutters loaned them by the First Naval Battalion of New York, and proceeded under sail to Niantic. Camp had previously been established by the State authorities, and part of the equipment shipped by rail, so that in a short time after their arrival routine was established.

The State inspector made his visit on the day of my arrival, so that we inspected jointly, although I remained till the morning of August 24, when camp was broken.

The State of Connecticut has dealt most liberally with this organization. Its signal outfit, uniforms, fieldpieces, and arms and accouterments are the very best. The blue parade jacket worn by the enlisted men, with blue mustering clothes, is a revival of the old-time and picturesque navy jacket. The artillery drill of the division, with ammunition, limber, and all modern paraphernalia was a model of excellence. The signaling, infantry, and police duty were good features. The commissary arrangements, through a caterer from New York, were too good, as shown by the divisional sick list. A civilian doctor was in attendance, which emphasized the fact that in all separate divisions an assistant surgeon should be borne on the rolls. Sixty-five out of a total strength of 80 were present during the tour, or about 82 per cent, which was the result of uncertainty as to the date of the tour, owing to the inability of the Department to decide whether or not a man-of-war would be available.

The guard duty was a weak feature of the camp, but owing to the confusion due to the State authorities expecting Army methods and the Navy its own methods, there will be much to find fault with on all sides. The commissioned officers of the New Haven division are highly intellectual, and have a good grasp of the problem before them. It would, however, be a great gain if an ex-Navy man, a graduate of the Naval Academy, were included in their numbers; but as it is, they are remarkably efficient.

On the 23d target practice was had on the beach with 1-pounder R. F. fieldpieces at a barrel target moored 300 yards to seaward. Pistol and small-arm target practice was also had. The 1-pounder practice was very good.

The division broke camp on Saturday, August 24, and proceeded under sail to New Haven in the four cutters, leaving Niantic at 10 a. m. It came on to blow in the afternoon, but two of the cutters reached New Haven at 8 p. m. Of the two remaining cutters, one reached there at noon the next day and the other at 9 p. m. the next evening. The monitor *Wyandotte* arrived at New Haven the day before the annual tour began, and will do much to add to the already creditable efficiency of the organization.

The tour of duty emphasized the importance of concentrating and combining the various organizations during the annual tours. With 60 men in camp, the necessity for keeping a guard of 8 men continuously is unduly hard. Of course guard duty is important and has some value as an occasional experience. As carried on in all small naval militia camps it is a physical strain and absorbs too large a percentage of the time and physical energies of the individuals, as the detail comes around entirely too often. If next year the Naval Militia of Connecticut and Rhode Island could combine with the First Battalion of New York for a week at Orient Point, Long Island, an excellent scheme of joint reconnaissance could be carried out. Ships and a torpedo boat could be in attendance at the camp, and on the return home each organization could make a boat reconnaissance expedition of great value.

Very respectfully,

A. P. NIBLACK,
Lieutenant, U. S. N.

The SECRETARY OF THE NAVY.

REPORT

OF

THE BOARD OF VISITORS

TO THE

NAVAL ACADEMY, 1895.

ANNAPOLIS, MD., *June 7, 1895.*

The SECRETARY OF THE NAVY:

The Board of Visitors to the Naval Academy, at Annapolis, Md., respectfully submit the following recommendations:

(1) That the age of entrance to the Naval Academy be not less than 15 and not over 17 years.

(2) That the present six years' course be reduced to five years, all of which shall be spent at the Academy.

(3) That at the end of the five years' course those successfully passing the same to receive certificates of graduation; that those of the graduates who are required to fill vacancies in the naval service be appointed to the same, and the residue of the graduates, if any, discharged as provided by law.

(4) That applicants for admission be nominated one year in advance of the date of their examination for admission.

(5) That there should be but one time of admission, which should be in May in each year, and the candidates failing at this examination for admission be not given an opportunity to pass another examination for admission to the same class.

(6) That Congress be asked to appropriate as soon as possible $6,000, to be immediately expended for the improvement and extension of the sewerage system of the Naval Academy.

(7) That the Secretary of the Navy be, and he is hereby, requested to appoint a commission consisting of five naval officers, whose duty it shall be to examine and report upon the present condition of the grounds and buildings and the sanitary condition of the Naval Academy; that their report be made to the Secretary of the Navy, and by him submitted to Congress at its next session, with such recommendations as he may see fit to make in the premises, that there shall

accompany such report a map of the grounds and buildings, as now constituted, and also a map of the grounds and buildings as they will appear under the system to be proposed by the commission; that said report shall also contain a complete description of each building now standing and in use upon the grounds, with a statement as to its age, value, and present condition, and also a like description of each building to be repaired or rebuilt or erected, with an estimate as to the cost of repairing, rebuilding, or erecting, as the case may be.

(8) That two sailing vessels be built for the use of the Academy suitable for "practice ships."

(9) That a solarometer be purchased for the use of the department of navigation.

(10) That the instruction in plane and solid geometry be improved by the introduction of a better text-book and the free use of original geometrical problems.

(11) That the instruction in the differential and integral calculus be placed under the direction of the head of the department of pure mathematics.

(12) That a fuller course of laboratory instruction in physics be provided, and the head of this department be authorized to prepare a report upon the needed additions to the apparatus and the requisite extension of the physical laboratory.

(13) That provision for systematic instruction in founding, forging, pattern making, and boiler construction be made in the department of steam engineering, as well as for instruction in experimental engineering, and that the head of the department be authorized to report upon the additional equipment and apartments necessary to carry this recommendation into effect.

(14) We are of opinion that increased results in efficiency in speaking the modern languages would be secured by increasing the number of instructors, so that more time may be devoted to each individual cadet at recitations.

(15) We are of opinion that in view of the growing importance of our relations with the Spanish-speaking people of South America increased attention should be given to instruction in that language.

(16) That an annual appropriation of $1,000 be made by Congress for binding such books and periodicals in the Academy as it may be found necessary to bind.

(17) We have been pleased with the evidence on every hand of the efficient and wise administration of Superintendent Cooper and the firm discipline and splendid work of Commandant Brownson and the other officers of the Academy.

(18) The Board would call especial attention to the report submitted by the committee on grounds, buildings, and sanitary condition. This subject has received the most careful attention of the Board, collectively and individually. The report of the committee on this subject was adopted unanimously, and the Board feels that it can not too

ly commend and support the recommendations made therein. ›ard feels that the Naval Academy should be an institution sec- none of its kind in the world; that it should meet every modern ›ment as an institution of learning, not only as to the instruction but as to the conveniences and accommodation afforded officers, ›tors, and cadets. It feels that the present buildings are insuffi- ›nd inadequate for the purposes to which they are assigned, and reconstruction of buildings, grounds, and sanitation, upon the pproved modern architectural and sanitary lines, will not only incalculable benefit to the naval service, but a progressive step will meet the approval of the whole country. The Board feels can not too strongly commend the report submitted by the com- on grounds, buildings, and sanitation, and expresses the hope s recommendations will be embodied into law the next session ›gress.

For the reasons which have influenced the Board in submitting ›egoing recommendations (aside from the personal observation of ›ember), attention is called to the reports of the several commit- the Board, which reports are hereby made a part of and explan- ›f this report.

CHAS. J. FAULKNER, *President*,
J. A. T. HULL, *Vice-President*,
JOSEPH D. SAYERS,
FRED. T. DUBOIS,
WM. M. THORNTON,
A. F. FLEET,
THOMAS R. LOUNSBURY,
E. P. MORRISSETT,
ROBERT M. THOMPSON,
J. B. HENDERSON,
M. M. BENTON,
FARISH C. TATE, *Chairman*,
Committee on Final Report.

APPENDIX.

REPORT OF THE COMMITTEE ON THE CONDITIONS OF ADMISSION TO AND DISCHARGE FROM THE NAVAL ACADEMY.

The committee on the conditions of admission to and discharge from the Naval Academy beg leave to submit the following report:

It is the opinion of your committee that, in order to secure the best results, it is important that those purposing to enter the Navy should begin their preparation at a comparatively early period, so that the time of their entrance into the junior branches of service should not be much beyond the age of 21. Accordingly, the age of admission to the Academy, which now ranges between 15 and 20 years, should be reduced to between 15 and 17.

They are further of opinion that the course which now extends over six years can be advantageously reduced to four, by dropping the last two years now given up to service at sea. At the end of the four years' course all cadets who have successfully passed their examinations should be entitled to receive certificates of graduation. The number of them then required to fill vacancies should then be determined, and the remainder should be allowed to enter at once upon their vocations in civil life. The committee are also of opinion that, in order to secure adequate time for preparation, applicants for admission should be nominated one year in advance of the date of their examination; furthermore, that there should be but one time of admission. which time should be in May of each year, and the candidates failing at this examination should not be given an opportunity to pass another examination for admission to the same class.

T. R. LOUNSBURY.
R. M. THOMPSON.
J. B. HENDERSON.

REPORT OF THE COMMITTEE ON SUBJECTS OF STUDY AND STANDARD OF SCHOLARSHIP.

Your committee respectfully report that the character of the institution determines the subjects of study, and hence the marked difference between the curriculum of this school and those of other first-class institutions.

This is an academy established and maintained for the purpose of educating and training officers for the Navy. The subjects of study, therefore, are those calculated to produce seamen—seamen of the highest type, skilled in the art and science of navigation. But the naval officer must be more than a mere sailor. He must have knowledge of the art of war, be familiar with the construction and use of guns, torpedoes, and small arms, and, owing to the revolution caused in naval warfare by the introduction of steam and armored vessels, should be well informed about marine engines and modern naval architecture.

Moreover, unless he would involve his country in disputes with foreign powers or himself in unpleasant complications with the Department at Washington, he must be acquainted with international law.

Here, then, are several professions and trades, to master any one of which would require years of study and more years of practice.

It is evident, then, that in the selection of subjects of study, choice must be made. All our cadets can not become international lawyers, naval constructors, ordnance officers, steam engineers, and thorough sailor men; nor is it desirable that even one of them excel in all these branches, but it is essential that every line officer of the Navy should be an accomplished seaman.

Your committee are therefore of the opinion that among the subjects of study, seamanship and kindred branches should occupy the first place, and every provision should be made for securing for the cadets full instruction in those branches. Practical seamanship can be learned only on board ship.

Your committee therefore recommend that there be added to the equipment of the Academy two lightly sparred, easy working, fast sailing sloops of war, which should be full-rigged sailing ships. The Academy should also possess a number of light cutters of different rigs, that the cadets might acquire the art of boat sailing. These should be furnished at once.

As the present curriculum is the result of fifty years' experience, your committee do not desire to make any suggestions of new subjects of instruction, being assured that the Academic Board are fully qualified to determine what should be the subjects of study and how they shall be pursued.

As to the standard of scholarship, other committees which have made investigation into the instruction as given in the several departments will doubtless report in detail, and as your committee feel that they have already encroached sufficiently upon matters assigned to their colleagues, we have nothing to suggest.

Respectfully submitted.

M. M. BENTON.
A. F. FLEET.
WM. M. THORNTON.

REPORT OF THE COMMITTEE ON GROUNDS, BUILDINGS, AND SANITARY CONDITION.

Your committee on grounds, buildings, and sanitary condition beg leave to report that upon a careful inspection they find that the grounds and buildings are as well kept and maintained as is possible under the circumstances, considering the age and character of the buildings and the appropriations made by Congress for their maintenance. Your committee, however, are unanimously of the opinion that very many of the buildings are entirely unsuitable for the purpose, and that Congress should be asked and urged for legislation and appropriations necessary to renovate and reconstruct such of the present buildings as may be susceptible of renovation and reconstruction, and also to erect new buildings, larger in size, more comfortable for use and occupancy, and better adapted for the purposes and objects of this institution.

It is not going too far to say that many of the present buildings are entirely unworthy for present use and altogether inadequate to properly meet the demands that must necessarily be imposed upon them.

The attention of the Board is respectfully invited to a careful consideration of the statements made in the presence of the Board by the superintendent of the Academy, and of the assistant in charge of buildings and grounds, which are appended hereto as a part of this report.

Your committee have by personal inspection found these statements to be entirely accurate in every particular. As to the condition of the sewerage system, your committee beg leave to say that they have found it grossly defective, and that the health of the institution imperatively demands an early expenditure of a sum amply sufficient for the purpose of repairing and extending the present system until it shall have become perfect. In conclusion, your committee submit the appended resolutions for the consideration of the Board, and recommend their adoption.

Respectfully submitted.

JOS. D. SAYERS, *Chairman*

RESOLUTION 1.

That Congress be asked to appropriate at the earliest date practicable the sum of $6,000 to be immediately expended for the improvement and extension of the sewerage system of the Naval Academy.

RESOLUTION 2.

That the Secretary of the Navy be, and he is hereby, requested to organize a commission to consist of five officers of the Navy, who shall forthwith proceed to examine and report upon the present condition of the grounds and buildings and also upon the sanitary condition of the Academy, such report to be made to the Secretary of the Navy, and by him be submitted to Congress at its next session, with such recommendation as he may see proper to make in the premises. And there shall accompany such report a map of the grounds and buildings as now constituted and also a map of the grounds and buildings as they will appear under the system to be proposed by the commission. And the report shall also contain a complete description of each building now standing and in use upon the grounds, with a statement as to its age, value, and present condition, and also a like description of each building to be repaired or rebuilt or erected, with an estimate as to the cost of repairing or rebuilding or erection, as the case may be.

These resolutions were unanimously adopted by the Board.

H. OSTERHAUS,
Lieutenant, U. S. N., Secretary of the Board.

STATEMENT OF CAPT. P. H. COOPER, U. S. N., SUPERINTENDENT OF THE NAVAL ACADEMY, IN RELATION TO GROUNDS, BUILDINGS, AND SANITARY CONDITION.

In 1845 this site of 10 acres came into the possession of the Navy Department. In 1851 the group of buildings known as Buchanan Row were begun. In 1860 my class of about 120 members was quartered on board ship. In 1865, when the Academy was restored to its present location, an effort was made to erect new quarters for the cadets. When these were completed in 1869 the cadets were quartered in them, in the old quarters, and some on board ship.

These new quarters, now about twenty-five years old, will hold only about 180 cadets. The present arrangement is most inconvenient. The cadets must go some distance to the different recitation rooms and to the drill ground; and the implements with which they drill are widely separated.

Now, at the end of fifty years, the buildings in which the cadets are quartered are not only wholly inadequate to accommodate them, but are falling into rapid decay, and it is only a matter of time when some of them must come down.

From a survey it will require $20,000 to make the "new building" habitable. This building contains rooms for 180 cadets. It has also recitation rooms, executive offices for the commandant of cadets, storerooms for provisions, etc., bathrooms for cadets, and attic storerooms. In connection with it is a structure called "the tower," which contains the urinals. This tower is an extension to the main building.

The water-closets, which are contained in a separate wooden structure, connected with the main building by a covered way, are hardly fit for servants.

The sanitation of the building has been carefully watched, but it is inferior.

I think the walls of the building are sound.

The cadets' rooms are lighted by one window and a pendant gas. The rooms are heated by steam. I think the rooms for the cadets should be arranged as at West Point or in modern college dormitories.

In the lower buildings, called Stribling Row, where one-fourth of the cadets are quartered, much space has to be occupied for storerooms, offices, etc., under the necessities of the situation.

As to the officers' quarters, four of them, called flats, are occupied by four familes in each, giving to each family a parlor, dining room, two bedrooms, and a kitchen.

The Board house is occupied until May 1 of each year by young married officers, four families living there, each having but three rooms, and using the kitchen and parlor in common.

Those officers who are compelled to live outside the grounds because of lack of accommodations for them are put to an additional expense of from $600 to $1,000 per annum. Two officers now occupy one of the buildings in the yard which was once a brewery, and one of them lives in the "vat" of the brewery.

I think an appropriation of $30,000 would be sufficient to make places for all the officers within the walls. It would take $20,000, in addition to this $30,000, to properly put in repair the officers' quarters in Blake Row.

The buildings in the yard have not been painted since 1885.

As to the sewerage, we have no main plan. There are eleven different outlets, the ordinary depth being not over 5 feet. Sewage is emptied within 200 feet of the nearest occupied building. Fevers may have resulted from this.

Our hope is to construct a main sewer and to carry the pipe out into deep water in the channel. This can be done for $5,000. Under the existing status the city must extend its sewer system along with this extension, as one of its sewers runs along with ours.

We get our water supply from the town. The water is of good quality. One artesian well has been sunk. At 150 feet good water was struck, but it was continued to 250 feet, when sulphur was found, and the well was closed.

As to the cost of heating and lighting the Academy, it is $17,000 per year.

Captain Cooper then explained, in connection with drawings, the proposed plan of construction of Admiral Ramsay and himself, by which the present plan of the grounds would be radically changed. The cadets would be quartered in one building, and the recitation rooms, dining room, kitchen, armory, offices, etc., would be systematically arranged in the vicinity of cadet quarters.

He considered the present library building adequate for the necessities of the Academy, and the steam building as grossly insufficient for its purpose.

He thought that $500,000 would be sufficient for the improvements and alterations proposed and described.

He stated, in answer to a question by a member of the Board, that he thought that the proper plan to be adopted in regard to the construction of the new buildings would be to request the Secretary of the Navy to appoint a commission of naval officers to examine and make a report upon them.

STATEMENT OF LIEUTENANT COMMANDER ROSS.

Lieutenant Commander Ross explained in detail, in connection with the blue-print drawings, the proposed extension of the sewerage system; the methods by which salt water could be used by means of the salt-water system; pumps to flush these sewers; the extension of the wharf 150 feet and of the sewer pipe 175 feet farther into the channel, and the proposed method of constructing a wharf for steamers of great draft.

He stated the approximate cost of a sewerage system connecting with the district called "new grounds" and carried out 300 feet into the channel by iron piping, and also the Buchanan Row sewer connection with the Blake Row sewer, and extended outside of bulkhead in eastern sea wall.

Lieutenant-Commander Ross then spoke of the present cadets' water-closets and the proposed improvements, consisting of a building 60 by 20 feet, one and one-half stories in height, iron and glass roofs, and of enameled brick, connected with the cadets' quarters by a covered way with breaks in sides. He then spoke of the pro-

posed raising of the sea wall on the east front, and showed from the diagrams whereby 3 acres would be added to the grounds. He estimated the cost of this improvement at about $20,000. In this connection he described the flooding of the marine barracks and storehouses at high tides and during storms, resulting from the inadequate height of the present sea wall. He stated that with this improvement of the sea wall the "backing up" of the water in the sewer would not occur if ball valves were used. He also described the effects of this overflow upon the storehouses and marine barracks.

Judge SAYERS. What facilities have you for extinguishing fires?

Lieutenant-Commander ROSS. Excellent ones.

So far as the buildings were concerned he thought facilities sufficient, but thought a fire engine, to cost $4,000, should be supplied to protect the shipping at the wharf.

Lieutenant-Commander Ross also recommended an electric-light plant, duplex 3-wire, conduit system, to cost about $55,000.

In regard to the water supply, he stated he thought it would be insufficient even under the recent improvements undertaken by the city of Annapolis if the weather was such as to require the use of eight boilers for heating purposes, and that an artesian well was recommended so as to test the water question and see if a suitable supply could be gotten in that way for only an experiment.

REPORT OF SUBCOMMITTEE ON SEAMANSHIP, ORDNANCE, AND NAVIGATION.

The subcommittee on seamanship, ordnance, and navigation have examined the several departments intrusted to them with as much care as was possible in the limited time at their disposal. They have consulted the heads of the several departments, and as the result of the information so obtained they report that—

(1) The department of seamanship is provided with all the apparatus necessary for theoretical teaching, but that entirely inadequate provision has been made for the practical teaching of seamanship; that in the opinion of your committee it is of the greatest importance that as much practical seamanship should be taught at the Academy as possible, because after leaving the Academy the old-style seamanship can no longer be acquired in the modern vessels, and your committee are of the opinion that two sailing ships should be built for the use of the Academy suitable for practice ships.

(2) That the ordnance department has in the steamer *Bancroft* a vessel well adapted for use in teaching the cadets the use of the various kinds of guns, and our inspection of the practice drill convinced us that good use had been made of their opportunities; that the cadets were well trained, were familiar with and were skillful in the use of the guns. The building, however, which is set aside of the Academy grounds for the use of the ordnance department for teaching the use of guns is so totally inadequate to the purpose that we can only wonder that such good results have been obtained with such very inefficient apparatus.

(3) That the department of navigation appears to have done admirable work in teaching and training the cadets; that the building used as an observatory is badly adapted for the required work. This department is fairly well equipped with necessary apparatus, but your committee are of opinion, and recommend, that a solarometer for the use of this department be purchased.

R. M. THOMPSON.
M. M. BENTON.
F. C. TATE.

REPORT OF THE SUBCOMMITTEE ON DISCIPLINE, DRILLS, ETC.

The subcommittee on discipline, drills, etc., have carefully examined the subjects assigned it, and find as follows:

(*1*) *Discipline.*—We find nothing to criticise and much to commend. The commandant of cadets, specially charged with enforcement of proper discipline, is admirably adapted to compelling respect for the rules of the Academy, and at the same time preserving the confidence of the cadets. We commend especially the idea of so enforcing obedience as to preserve the highest sense of honor and self-respect of the cadet.

(*2*) *Drill.*—We have attended all drills, and have been pleased with the promptness and accuracy with which all movements were executed. The evolutions of the companies were of such high character as to deserve the commendation of expert tacticians. Too much praise can not be given the efficiency of the instructor and skill of the cadets in this department.

(*3*) *Practical exercises.*—The committee found the practical education of the cadets so thorough that all acquired a fair knowledge of engineering, and some were capable of highest class work. We have nothing to suggest to improve this department except enlarged quarters.

(*4*) *Administration.*—The committee have nothing to suggest to improve the administrative department of the school. The present superintendent is doing a splendid work in building up and harmonizing and administrating the government of the Academy on such lines as to bring into the service of the Government the enthusiastic support of his entire corps of instructors and the generous rivalry of the cadets.

(*5*) *Police.*—The neatness of the grounds gives ample evidence of the care and thoroughness of the police system in force. No better care of buildings and grounds could be had. We cheerfully testify to courtesy which has been extended by all the departments investigated. The officers have all expressed a desire for fullest and freest investigations, and let criticism follow if deserved. We have talked with cadets in such way as to get at their true opinion, and find they fully appreciate the wise and firm administration of Superintendent Cooper, and the firm discipline and splendid work of Commandant Brownson and the officers under him.

J. A. T. HULL.
M. M. BENTON.
F. T. DUBOIS.

REPORT OF THE COMMITTEE ON STEAM, MATHEMATICS, PHYSICS, AND MECHANICS.

Your committee has enjoyed the benefit of full and frank conferences with the heads of the several departments, and after due consideration of the text-books employed in construction and a careful inspection of some of the papers set at the monthly and semiannual examinations, we desire to express to your Board the following convictions:

(*1*) *Mathematics.*—That in this subject the course of study is sufficiently rudimentary and should by no means be reduced in extent, in order to provide time for the introduction of any additional subject or subjects into the course of the Academy. On the contrary, the text-book used in plane and solid geometry is less good than the traditions of this school demands, and inferior as a work of instruction to the other manuals employed in the course. They recommend that a better book should be introduced and very full use made of original geometrical problems and exercises in the teaching of this fundamental discipline. And they furthermore advise the transfer of the subject of the differential and integral calculus to this department, in order that all parts of the work of instruction in pure mathematics may be under the responsible direction of a single head professor.

(2) *Mechanics.*—A similar examination of the course in mechanics has convinced your committee that the proposed reduction of time in this subject, with the view of introducing additional hours of instruction in English, will be injurious to the works of the Academy. They are informed that its effect will be not only to limit the scope of theoretical teaching, but to eliminate from the course all laboratory instruction in applied mechanics, and surrender this work into the hands of the ordnance department. Your committee feels constrained to express its conviction of the unwisdom of this change, to urge that the amount of laboratory instruction be increased rather than reduced, and to point out to the visitors the desirability in all scientific subjects of a close alliance between didactic and laboratory instruction. If the suggested requirement of a residence of five years at the Academy be authorized, additional time for English studies will be allowed without sacrificing the thoroughness and extent of either the didactic or the laboratory teachings. To cut down the time allotted for instructions in applied mathematics will be disastrous to the best interest of scientific education and subversive of the fundamental aims of the course here provided for the naval cadet.

(3) *Physics and chemistry.*—Your committee reports that the course of instruction in physics and chemistry is well proportioned and well taught. The laboratory facilities in chemistry appear to be ample for the wants of the Academy. Those in physics are more elaborate and yet less well suited for the needs of undergraduates. Especially arranged rooms are required, and a larger outfit of simple apparatus should be provided, so that the cadets may pursue a fuller course of laboratory training parallel with the course given in lecture room and class room. Additional space will have to be provided by an annex to the present physical laboratory, the general plan of which has already been studied by the head of this department. The improvement is only the just due of these branches of scientific culture, and the authorities who are charged with the care of the Academy and the provision for its work should see to it that the requisite funds are provided. Your committee deprecates most earnestly the sacrifice of any portion of the time heretofore granted these subjects, and trust that additional hours will be obtained for English and other literary studies by some other plan than abridging the periods devoted to the natural sciences.

(4) *Steam engineering.*—Your committee desires to report that the present management of this department is at once efficient and progressive. The chief professor recommends the following improvements:

(*a*) An extension of the building and the fitting up an adequate foundry, pattern shop, boiler shop, and forge shop, and the provision of certain machine tools of greater weight and more modern construction than those now employed in the shops.

(*b*) Provision for instructions in experimental engineering, including strength and elasticity of material, boiler efficiency, the duty of engine, and the formative use of all the apparatus needed in determining the behavior of steam machinery.

The committee desire to advocate and indorse these recommendations and to urge that the head of the department proceed with the preparation of plans and estimates for these extensions and additions.

In conclusion, your committee begs to reiterate the opinion that ample and accurate instructions in the mathematical and natural sciences and the applications is for the Academy a conditional necessity, and to express the hope that no temptation to provide for any other subject whatsoever will induce its guardians to sacrifice these "weightier matters of the law."

W. M. THORNTON.
R. M. THOMPSON.
J. D. SAYERS.

REPORT OF THE SUBCOMMITTEE ON ENGLISH STUDIES, MODERN LANGUAGES, DRAWING, PHYSIOLOGY, AND HYGIENE.

In company with the heads of the different branches of this department we have carefully inspected the workings and results of the training, and report a general average of high efficiency. We, not having been present at the examinations, can not form any opinion of any results other than appear before us. Judging from these alone, we have reason to believe that a thorough practical knowledge had been imparted to the cadets in the important branches of this department of this institution. We have been especially impressed with the efficiency displayed in the department of drawing.

We most cordially concur in the opinion and suggestion of this committee's report of last year that, in view of the growing importance of our relations with the Spanish-speaking people of South America, increased importance should be given to the instruction in that language, especially in speaking that language with facility and accuracy. We further are of opinion that increased results in efficiency in speaking the modern languages would be secured by increasing the number of instructors in this department, so that more time might be devoted to each individual at recitation. We find it difficult to offer any suggestion of improvement in the methods employed and division of time adopted, and feel assured that all that remains to be done after the means employed by the Government rests with the cadet himself.

In the department of physiology and hygiene a high degree of efficiency was exhibited, manifesting careful instruction in setting up exercise, fencing, boxing, and calisthenics. We have been pleased with the evidences on every hand of the thoughtful care shown for the welfare of the cadets, the thorough discipline maintained, the excellent physical condition and soldierly bearing of the whole corps of the Academy.

E. P. MORRISSETT.
T. R. LOUNSBURY.
A. F. FLEET.

REPORT OF THE COMMITTEE ON FINANCE AND LIBRARY.

The committee begs leave to report that it has examined the system of requisitions, inspections, certificates, and vouchers now adopted and in use in the business transactions of this Academy, and to state that this is regarded as highly satisfactory in every respect, and insuring economy on the part of the cadets and accuracy in keeping the accounts.

The committee would report the rooms in which the supplies are kept as entirely inadequate to the demands of the amounts of supplies required to be kept on hand, and would suggest that additional room be supplied at the earliest moment practicable, both for the convenience of the officers in charge and for the better preservation of the stores committed to their keeping.

In the library there are now 34,834 volumes, an increase of 986 volumes during the past year. The source of this increase is the annual Congressional appropriation of $2,000 for the purchase of books and periodicals, and while more money could profitably be used in making additions to the library, that amount is sufficient to keep the library supplied with the more important issues of the press relating to the subjects of study followed at the Academy. The most pressing need of the library is more freedom in the matter of rebinding books. At present, owing to legal restrictions which were not intended to affect libraries, all binding must be done at the Government Printing Office and only cloth or half skiver may be used, so that if a valuable book is given to the library and it happens to be in paper covers, it is not possible to have it appropriately bound; or, if a volume of a set of a scientific journal needs rebinding, it can not be done in a style to match the rest of the set.

The universal library experience is that for permanency there is no leather like morocco, which is not so expensive as calf, and but a little more expensive than sheep or skiver, so that where permanent use is to be considered it is really economy to bind in morocco. To obtain this freedom it will be necessary for Congress to put the name of this library in the list of unrestricted libraries, as given in section 86 of the public printing bill, approved January 12, 1895. Also in the matter of binding for this library there is need of a definite appropriation. The present appropriation is simply for the purchase of new books, and the expense of binding the journals and magazines and of rebinding the books that may become worn has to be met by the courtesy of the Navy Department from the general appropriation for printing and binding for the Navy. There are many demands made on this appropriation, and often there is no money left for the use of this library, so that your committee would recommend that Congress be asked to appropriate $1,000 for binding library books, this amount to be set apart as an independent appropriation, against which would be charged the expense of binding in the Government Printing Office at Washington such books and journals as need it for convenience and better preservation.

A. F. FLEET.
WM. M. THORNTON.
E. P. MORRISSETT.

ADDRESS OF HON. JNO. B. HENDERSON TO THE GRADUATING CLASS OF 1895.

LADIES AND GENTLEMEN: My associates on the Board of Visitors have assigned to me the duty of communicating to the officers of the Naval Academy, and to the members of the graduating class of cadets, some of the impressions produced by our visit to the institution.

Our coming here was not at all necessary to impress upon us the great value, indeed the absolute necessity, of this school. The conviction of its necessity we merely shared in common with the masses of our people. Every patriotic American is, or ought to be, proud of the West Point and Annapolis academies, and the perpetuation of these Government schools is now no longer a question for controversy or debate.

OFFICERS: The special duty, however, resting upon us as a Board of Visitors is to examine into the condition of the buildings and grounds deemed necessary for the proper conduct of the institution, to ascertain the character and extent of its studies; its discipline, drill, and general administration; its standards of scholarship and the proficiency in academic and technical knowledge, entitling the cadet to be called an officer in the service of his country.

This information, when obtained, we must communicate to the Secretary of the Navy. He will transmit it to the President, who, in like manner, must send it to Congress; and whether our recommendations shall bring forth fruit or be forever laid away in that silent grave which Congressional committees so readily prepare for unpleasant subjects is a question depending on so many contingencies that it is needless now to discuss it.

Without intending to indicate, even in the remotest degree, the substance or character of our recommendations on the several subjects referred to, we can not consent to leave Annapolis without expressing to the superintendent and his corps of assistants, and to the several heads of departments and their assistants, our full and thorough conviction of their ability and efficiency as officers of the Academy. We further desire to give them some evidence, however inadequate, that we appreciate the cheerful aid extended to us by them in the performance of our duties here, and that we shall most gratefully remember their uniform courtesy and kindness.

And now, after a few words to the graduating class of cadets, we shall leave you to resume the good work in which you are engaged, a work so gratifying to the country and so honorable to yourselves.

YOUNG GENTLEMEN OF THE GRADUATING CLASS: The first thing of importance to be remembered by you is the fact that your education is the free and generous gift of your Government Common gratitude suggests whilst loyalty demands that in defense of that Government no sacrifice on your part, even life itself, is too great.

Another thing to be remembered is that each of you was selected from among thousands as most worthy and deserving of this great distinction. You can not now dishonor the place without disgracing yourselves. You are, in a manner, set apart and consecrated as the nation's chosen defenders. You are therefore placed upon an eminence which attracts and commands public attention. You can not, if you would, avoid observation; you can not avert the keen glances of scrutiny. In the same proportion as much has been given to you, much will be required. The consciousness of your great advantages must be tempered by the constant presence of your obligations to society and to your Government. Your honor, your characters, your successes, and your failures are indissolubly connected with those of your country. In the naval and military officers of the United States you have already high standards of integrity and merit. If you can not excel these, you must at least imitate them.

In this connection, I know you will pardon me one other thought. Your graduation does not terminate the necessity of unremitting work. For the struggles of life, to be sure, you are already spendidly equipped. But remember, this is a practical and a progressive age. The achievements of genius fall far below those of industry and application. Genius, indeed, takes but few honors in the struggles of this world.

This, too, is essentially an era of thought and investigation. Antiquity has lost much of its sanctity. Superstition is being overthrown, and the human intellect, guided by the light of scientific research, is being installed as the supreme authority. Nothing now is above criticism. Everything is placed under the microscope or else fused in the crucibles of reason. Electric lights are used in the moral as in the physical world. If defects exist, they are at once revealed. Ignorance can no longer wear the garb of wisdom. Much less can vice now masquerade as virtue. What we are unto ourselves, that also must we seem unto others.

The layman can scarcely realize, much less measure, the advance in naval warfare or in naval equipments during the last twenty-five years. Much of that advance is due to the graduates of this institution. They were not content with the honors of the diploma alone. They entered the fields of research and invention, and to their distinguished labors are we greatly indebted for that magnificent structure now known as the American Navy—giving honor, as it does, to the great nation it represents and shedding abundant glory on its founders, among whom we gladly place the present distinguished Secretary of the Navy.

Turn for a moment to the history of the pending contest between armor plating and projectiles. It has long continued with varied results, and the victory is yet uncertain. In this field of inquiry alone is abundant opportunity for work, in which every discovery marks an epoch and proclaims its author a benefactor to his country.

Can electricity be substituted as a motive power for steam? Riches and immortality belong to him who solves the problem.

Can land fortifications be so built as to resist the destructive force of artillery? Can the air be navigated either by or against its own currents? These are but samples of the many problems to be settled by you, or by others having similar training and education.

My young friends, the old complaint by officers of the Navy, that they have nothing to do, is likely soon to cease. It is best that wars should never come. But come they will, and the great battles of America, in all future wars, must be fought on the seas.

In the period of our national infancy it was possible to land troops upon our soil. That day has now passed, to return no more forever. The Spanish republics of our

own continent are, and will continue to be, our fast friends and allies, and even though hostile, they are too weak to invade us. No European power, except Great Britain, could possibly hazard such an experiment, and only then because of its ownership and possession of Canada and British Columbia. In such an event the military arm of our service would of course be actively engaged, but only long enough to seize and occupy these possessions. The stress of such a war as this would still be on our Navy. The high seas would at once become the arena on which armor and ordnance and torpedoes would be tested; the new theater on which heroes would be crowned, and on which the skill and bravery of our seamen would again brighten the stars and deepen the colors of the American flag.

Gentlemen, many of us who now come to you as visitors have passed the meridian of life, and some of us begin to feel the weight that presses us on to the sunset horizon. We have seen, and to a limited extent participated in, much that is now American history. We have witnessed the birth, the growth, and death of political parties. We have rejoiced over their victories and deplored their defeats. We witnessed the animosities and strife, the carnage and destruction of that great civil war which not only threatened the dissolution of the Union, but imperiled the hopes of free government itself. Some of us followed the old flag, some of us followed the new. But, thank God, we are all united to-day. We now worship one Constitution—the Constitution made by our fathers. We now honor but one flag—the old "Stars and Stripes." May it ever wave, "o'er the land of the free and the home of the brave!"

Once more my native State is a part of the Union, and the fame of her sons, Federal and Confederate, is again my legitimate inheritance. On her soil my grave would not be in a foreign land.

My young friends, civilized man must have government. It may be a monarchy, an oligarchy, or a democracy. We have chosen the last. In our system, the power to govern is lodged, not in one, not in a few, but in the whole mass of the governed. The road to wealth, to honor, and distinction is open to all. No birth here is noble without merit. We guarantee to each freedom of speech, freedom of conscience, freedom of the press. We assure equality of rights to all, and accept Nature's law, "The survival of the fittest."

With this Government, in a single century we have reached a degree of national power previously unknown to the world. Along with this growth of the nation the guaranties of personal liberty have been strengthened, and the intelligence, wealth, comfort, and happiness of the people have been constantly increased.

This is the Government which has selected you, above others, to be its guardians, its protectors, its defenders. Are you ready for the work?

Our Government now combines forty-four States, with possibilities of indefinite expansion. To this union of States, constructed by an illustrious ancestry and consecrated by memories dear to every American, we owe our political and social blessings. Let us to-day, the old and the young, join together and renew our pledge to support it forever—that old Union of patriotic devotion.

The union of lakes, the union of lands,
The union of hearts, the union of hands.

The union in hope, the union in fears,
The union in joy, the union in tears.

The old Union that none dare dissever,
The Union now—the Union forever.

REPORT

OF THE

CHIEF OF THE BUREAU OF YARDS AND DOCKS.

DEPARTMENT OF THE NAVY,
BUREAU OF YARDS AND DOCKS,
Washington, D. C., October 1, 1895.

SIR: I have the honor to submit the following estimate of amounts needed by this Bureau for the fiscal year ending June 30, 1897, with a report of the work done during the year ended June 30, 1895.

The estimates received from the commandants of the various navy-yards and stations amount to the following:

Improvements	$8,102,137.05
General maintenance	427,802.32
Repairs and preservation	587,905.53
Naval Home	79,819.00
Civil establishment	99,227.95
Total	9,296,891.85

After a careful examination the above has been reduced as follows:

Improvements	$1,295,190.78
General maintenance	265,000.00
Repairs and preservation	400,000.00
Contingent	15,000.00
Naval Home	79,893.00
Civil establishment	61,486.04
Support of Bureau	10,580.00
Total	2,127,149.82

Under improvements the following are some of the principal items:

Boston.—For the electric-lighting plant new boilers are needed; $4,500. The wooden cart shed is only a few feet away from the prison and a constant menace from fire. It is desired to remove this and alter the brick stable so as to accommodate the carts; $4,500 asked for.

New York.—The construction of two new docks (one completed and the other in progress) at some distance from the old one has rendered the erection of a workshop for "construction and repair" near the new dry dock very necessary. It is proposed to use this building as a machine, carpenter, and joiner shop for repairs to ships in dry dock; cost, $85,240. The wharves along the water front northward from the granite dry dock are of wood and a constant source of very great expense to keep in repair. An estimate is submitted toward substituting stone or concrete quay walls instead.

The commandant's house is nearly one hundred years old, and in many respects unsuited to modern housekeeping. Plumbing and heating arrangements require a thorough overhauling and renewing, and at the same time an addition should be built in order to supply rooms for entertaining foreign officers and also to provide sufficient accommodations for an average family, and a few spare rooms.

The building now used as a Yards and Docks workshop was originally erected for a stable. It is now in a dangerous condition, and within the last few months the Bureau has had to authorize pulling down the chimney to prevent serious accident. A new building is needed.

Dry Dock No. 3 is being constructed under the act of July 2, 1890, allotting the sum of $593,860.33 (from moneys accruing from sale of lands) for "extensions and improvements." A contract was entered into with Mr. John Gillies, of Brooklyn, in November, 1892, the price being $412,000. Changes were found necessary in the specifications, and, under the provisions of the contract, the length of the dock was increased in June, 1893, by 70 feet—cost, $45,556—and in August of the same year the body of the dock was located 50 feet farther inland in line with its axis; cost, $5,063.18. The total price was thus brought up to $462,619.18. The work not progressing satisfactorily, steps were taken in 1894 to hurry up the contractor; but all these failing to have the desired effect, the contract was, on April 12, 1895, declared forfeited, as provided for in the contract, and after due advertising a supplemental contract was entered into on May 8, 1895, with Messrs. T. & A. Walsh, of New York City, for the completion of the dock according to the original specifications, as amended, for the sum of $370,000, to which $133.38 was added by agreement. Prior to that time, however, $165,033.34 had been paid to Gillies, making the price of the dock $535,166.72. Of the original allotment of $593,860.33, $94,127.37 had been expended in other improvements, so that $35,433.76 had to be taken from another allotment of $300,000 made from similar source by act of March 3, 1893. It is now found, however, that, owing to the "quick" nature of the ground, additional changes will have to be made in the specifications and the cost be still further increased, so that an additional allotment of $50,000 is asked from this same fund to be made immediately available.

The more or less "quick" nature of the ground around the entrance to Dry Dock No. 3 (under construction) renders it necessary to protect it with wing and quay walls. This should be done before the entrance is dredged, as without the sheet piling and wall to support them there will be great danger of injuring the pump house and pipes. Therefore it is requested that $60,000 may be made immediately available for this purpose.

The Steam Engineering blacksmith shop is entirely too small for the demands made upon it, besides being at some distance from the machine shop. The coppersmith's shop is also too small and badly located for economical work. It is now desired to extend the south wing of the machine and boiler shop to make room for copper and blacksmith shops and also for an erecting shop, with overhead cranes, etc. An estimate is submitted for this very important work.

For continuation of the quay wall around the Whitney Basin, $25,000 is asked.

In 1894 Congress appropriated $70,000 for rebuilding Construction and Repair shops Nos. 114, 115, and 116. Of these, No. 114 has been nearly completed under contract with Messrs. J. M. Brosnan Bros., for the sum

of $20,000, the lowest bidder. Building No. 115 has been twice advertised, but the first time the lowest bidder, Thomas H. Stanley & Co., of New York City, to whom under the law the contract was awarded at $36,060.73, failed to execute the contract. After due time was allowed they declined to execute the contract, and the Attorney-General was asked to bring suit for the value of his bond, $1,000, and the building again advertised, and the contract was awarded to Thomas Dwyer, of New York, at $38,700. Thus $58,700 of the $70,000 have been taken for buildings Nos. 114 and 115, leaving No. 116 still to be provided for, and the price of steel, of which the frame of the building is to be constructed, is going up. The floors of buildings Nos. 114 and 115 had to be omitted in hopes of keeping within the appropriation.

Last January the Bureau, finding itself unable to reconstruct the three buildings for the sum appropriated, asked permission to divert $18,000 from the allotment of $300,000 made by Congress (act March 3, 1893), to this purpose, but Congress failing to grant this, the money asked to be diverted has been expended under the very pressing demands of the service, and the Bureau now finds itself obliged, largely owing to advanced prices, to ask for an additional appropriation of $40,000 to complete the reconstruction of these buildings.

League Island, Pa.—For dredging and filling in, $30,000. The steam generators for heating and lighting are in very bad condition, so the sum of $4,000 is asked for renewing them. For sanitary water-closets for the men, $5,580. For lightning rods and side walks, $2,000.

Washington, D. C.—The roof of the quadrangle building now rests on wooden trusses, which are gradually rotting away, and in the near future it will be necessary to put on a new roof; as this will be expensive, it is considered that true economy requires the substitution of steel trusses now and putting on a new slate roof; $59,411.77.

In order to comply with the needs of the gun factory the upper floor of the north end of the west side of the quadrangle building should be removed, the lower floor relaid, foundation for traveling crane put in, and general repairs made to this part of the building; $15,657.38. This to be made immediately available. The lower part of this yard has been filled in with the ashes, etc., and it is desired to surface it with gravel; $4,000.

A pair of railroad scales, capable of weighing the heaviest gun, is needed; $1,865.78.

The commandant's office was built about sixty-five years ago. The woodwork is very rotten and should be renewed; $4,810.84.

The eastern boundary wall should be raised and a couple of sentry boxes built, the filling in alongside having in some places reduced the height of this wall to about 6 feet clear; $4,202.

Dredging along the sea wall to secure a depth of 16 feet is desired; $3,961.

The paint shop at this yard is a small wooden building and a source of danger from fire (particularly spontaneous combustion). It is desired to erect a suitable shop at the west end of the yard for this purpose, in which to store highly inflammable material, so as to minimize the danger of this very valuable plant; $5,000.

Last year an estimate was submitted "For new iron roof and repairs to walls of foundry, $33,000." The appropriation act as it passed March 2, 1895, read as follows: "New iron roof for foundry, $33,000." Upon an informal reference to the Comptroller, the Bureau was informed that the $33,000 could only be expended for the roof, but not for repairs to

the walls. As the repairs to the walls were needed before putting on the iron roof, it has not been expended. It is now requested that Congress may be asked to pass a joint resolution to enable these needed repairs to be made.

Norfolk, Va.—A new ship-fitter's shop for construction and repairs is much needed at this yard; estimated cost, $215,200. A store shed at the dry docks would facilitate work; $18,750. For extension of quay wall, $25,000. The wharf north of timber basin is an old wooden wharf, and it is recommended that a quay wall be substituted; total cost, $91,760; $40,000 asked; otherwise $18,000 needed for repairs to wooden wharf. Toward converting timber basin into fitting basin, $25,000; foundations and stand pipe for water system, $13,000; boilers for electric-light plant, including shed and connections, $9,000; new locomotive, $4,500; derrick locomotive car, $7,000; extension and repairs to roads, $5,000.

Naval station, Port Royal, S. C.—The land at this station is in the shape of a Greek cross, one arm of which extends down to the water front, and diagonally across this is the dry dock. The total width of the water front is only 800 feet, with the entrance to the dry dock in the middle. It is urgently recommended that the sum of $25,000 be appropriated, or so much thereof as may be needed, for the purchase (by condemnation, if necessary) of lots 4, 5, fractional part of lot 6, all of lots 7, 10, 19, 20, 22, 23, 26, 27, 28, 29, 30, 58, 59, and 60. By securing this land at this time it can be done at much less cost than after it is built upon, and at the same time permit the proper location of the Government buildings. Also, should an appropriation be made for the much-needed dredging, acquiring the additional lands at this time will enable us to deposit the dredging on the low parts of this land, so as to raise it above the high tides that sometimes, as in the case of the hurricane of 1893, flood a great portion of it.

A chemical fire engine is needed at this place, $650; lightning conductors, $532.

A small hospital should be erected at this station, where we have marines, and in case of vessels being in that vicinity it would be a great relief to the sick.

The supply of water suitable for use in boilers is a great trouble at the station, and the sum of $15,000 is asked for an artesian well.

The dry dock at this station is practically completed, as far as the contractor is concerned. Its dimensions are:

	Ft.	In.
Length from coping to caisson in inner groove	466	6
Length from head of floor to caisson in inner groove	430	6
Width of body of dock at coping	126	
Width of body of dock on floor	54	
Width of entrance at coping	97	
Width of entrance at sill	66	
Depth over sill at mean high water	26	

To enable us to use this dock for our battle ships it is very important to have an ample anchorage off the entrance. To do this will require dredging about 1,500,000 cubic yards, a large portion of which should be put on shore to raise the level of the station. For purchase of dredger and dredging, $300,000.

A storehouse at this station, to cost $18,000, will be needed in connection with the machine shop that has already been authorized.

Key West, Fla.—A retaining wall in front of the station is much needed to prevent the encroachment of the sea during heavy blows; $3,400. Some dredging about the wharf is needed, estimated cost, $3,000.

Dry dock at Algiers, La.—Estimated cost, $1,250,000; for this year, $100,000. Upon a personal examination of this site I find that it is just below a point which is occupied by the Southern Pacific road as a terminal, and they are taking every precaution to prevent any wearing away of the point, such as washing away the muddy deposit under its wharves as the river begins to fall, thus avoiding the overloading of the banks.

Mare Island, Cal.—For the extension of the quay wall—a subject of very great importance at this yard—$30,000.

A bridge across the channel to Vallejo, at an estimated cost of $205,060 as an alternative to building in a ferry slip at a first cost of about $74,000. As the ferry slip is now projecting into the river, it causes very rapid deposits both above and below along the water front.

For grading and paving and chain guard around the stone dry dock, $11,475. A ship fitters' shed for construction and repair is much needed; $30,000. Storage shed for construction, $10,138.80. Yards roads to be extended, $10,000. Renewing sidewalks, $5,684.22.

The yard is 865 miles from the Port Orchard Dock, and as all the vessels of the Pacific and Asiatic stations are repaired on this coast the necessity of a large dock at Mare Island equal to receiving the largest of them for repairs becomes apparent.

Naval station, Port Orchard, Wash.—There is every indication that the dry dock at this station will be completed by about January 1, 1896, and in order that vessels may be repaired there a machine shop for general repair work is much needed, cost, $57,082.65, and a storehouse, to cost $19,904.

A reservoir, with the necessary water mains, to be constructed, $15,604.94.

To properly clear the station of undergrowth as a preventive against fire, $9,250.

PRINCIPAL ITEMS OF WORK DONE DURING PAST YEAR.

During the year an effort has been made to keep the buildings, dry docks, wharves, etc., at the various navy-yards and stations in repair and prevent decay; but owing to the constant rearranging and changing necessitated by new tools and the demands of the construction departments at the yards, it is only by the closest and in most cases an unwise economy that the appropriation is made to hold out.

Portsmouth, N. H.—Only such repairs as were needed to preserve buildings.

Boston, Mass.—An electric-light plant had been installed for lighting the yard and receiving ship. The enlargement of the naval prison has been completed, and various much-needed repairs made to several of the buildings and dry dock, and dredging entrance to dry dock.

New York.—Under the act of July 2, 1892, Dry Dock No. 3 is being constructed at this yard, and under the contract should be completed by the middle of December, 1896. In addition to this, the following are the principal works of improvement:

A boiler shop has been added to building 28.

Building No. 9, which had been partially destroyed by fire, is rebuilding under contract and well advanced.

A crematory for garbage has been constructed and is doing excellent service.

Quay wall foot of Main street is being built under contract, but progressing slowly.

A causeway is being constructed under contract across the Wallabout channel, as provided for in the appropriation act—progressing slowly.

The gateway at Sands street has been contracted for.

The ventilation of foundation walls of office building, concreting and laying a new floor have been completed.

Building 114 has been reconstructed, and building 115, new caisson for granite dry dock and about 328 feet of quay wall in Whitney Basin, and a building for inflammable oils have been contracted for and are in progress.

League Island, Pa.—An electric-lighting plant has been contracted for and is nearly completed. Work on the east dry dock pier has been completed and the paving of its surface contracted for.

The 100-ton shear legs have been contracted for and are now well advanced; various repairs have been effected.

Washington, D. C.—New iron timber shed has been about completed. Reconstruction of old forge shop was continued and nearly completed. A locomotive wrecking car, with 15-ton crane, has been purchased. The work of converting the old mold loft into a forge shop has been completed. Extension of yard wall through marsh on west boundary is progressing as fast as work on city sewer alongside will permit. Retaining wall and raising lower floor of store No. 10 nearly completed. Boiler house at copper rolling mill has been extended to cover new boilers. Part of store No. 6 has been fitted up as quarters for the seaman gunners. Part of store No. 2 has been fitted up for offices for the examining, retiring, and steel boards and court-martial room. A new tin roof has been put on the breech-mechanism shop. New roof trusses were fitted in the carriage-erecting and secondary battery mount shops.

Norfolk, Va.—The water system has been extended by driving more wells, and the water appears to be excellent. The quay wall has been extended 100 feet on the bottom and 75 feet on the top. The electric-light plant has been extended by erecting a new engine and two new dynamos and installing 42 arc lights. The rebuilding of building No. 15 (which was destroyed by fire), a fireproof store, is progressing satisfactorily. The sanitary condition of the yard has been much improved by the extension of the sewers and drains and putting in improved water-closets and urinals. These latter save much time for the workmen employed.

Steam engineering foundry and ordnance building No. 16 have had new metal roofs put on. The ship fitters' shop and building 31 have had new slate roofs. The main office building has been thoroughly renovated and refitted. Cranes and shears repaired. Railroad tracks repaired. Work has commenced on repairing the underpinning of quay wall in vicinity of 100-ton shears.

Port Royal, S. C.—The dry dock proper was practically completed in May, 1895, but much delay has been caused by the difficulty in getting dredging done in this vicinity. Now, however, the channel is open and the dock ready to receive vessels. It has not been accepted as yet, awaiting completion of some minor details.

The dock was tested in August by having the *Amphitrite* docked twice, once at each end. The body was found to be all right, but with the caisson in the outer groove and a spring tide some weakness of the design was developed in that part of the abutment between the inner and outer grooves. Steps are being taken to correct this. Repairs to

the wharf have been contracted for. The dredging around entrance of the dock has progressed very slowly.

Key West, Fla.—The hurricane of September 25, 1894, took about half the roof off the storehouse and seriously damaged the sea wall. These have been repaired.

Pensacola, Fla.—Owing to the scarcity of water at times at this yard it was decided to put down an artesian well, but at about 1,000 feet struck brackish water and at 1,185 effervescing water, and shortly after drill broke and they were unable to recover it. The gas is a hydrocarbon and burns readily. The other work at this station has been confined to preservation of property.

Mare Island, Cal.—The 40-ton traveling crane for the dry dock has been erected in place and tracks laid. Shed over galvanizing plant has been erected. Cottage for the electrician completed. The steam tug has been launched and named *Unadilla.* Railroad has been extended into steam engineering and ship fitter's shops. Yard roads have been extended and improved. New boilers for electric-light plant installed. New floors laid in joiner, boat, and block shops, dynamo room, and sail loft. Fire service has been improved. Caisson injured by capsizing has been repaired. New board walks laid. Dry dock pointed and such minor repairs as the appropriation would admit of. The yard is now supplied with water under a contract with the city of Vallejo. Its quality is excellent and the supply promises to be ample.

Port Orchard, Wash.—The dry dock is the only work of importance at this place.

Naval Home, Philadelphia.—The following table shows the changes among the beneficiaries during the fiscal year:

On rolls July 1, 1894		214
Original admissions		25
Readmissions		2
Total		241
Died	15	
Dropped, absent, and unaccounted for	1	
Dismissed	3	
Discharged at own request	2	
		21
Total remaining June 30, 1895		220

Commodore E. E. Potter, governor of the Home, was retired, in accordance with law, May 9, 1895, and was succeeded by Capt. J. C. Watson, U. S. N. The governor recommends an increase in the number of waitresses and laundresses, and increase of pay for head waitress, which was submitted in the estimates, also $200 increase for care of grounds, making the total estimate $578 more this year than for the last. Such repairs have been effected as the appropriation would permit, the library has been increased by the addition of 241 volumes, and every effort has been made to make the Home attractive to the faithful and deserving. As far as possible all improper characters are excluded, so that the self-respecting may really find it a home for their declining years. The number of rooms in the Home is 232, and if the increase of beneficiaries for the coming year is equal to the last there will be no spare rooms.

In this connection I would repeat my recommendation of last year, that the wharf and land cut off from the Home by the railroad be sold and the proceeds devoted to increased accommodations for, and additional comfort of, the beneficiaries. A statement of the amounts expended under each specific head of appropriations during the fiscal

year 1895, and the balance remaining unexpended as required by law, is appended.

An abstract of offers for special objects of improvements and supplies coming under the cognizance of this Bureau is made in conformity to act of March 3, 1843.

Also a report showing the amount expended during the fiscal year 1895 from appropriations pertaining to this Bureau for civilians employed on clerical duty, or in any other capacity than as mechanics and workingmen at the various yards and stations, with estimates for the fiscal year 1897, in accordance with law.

Very respectfully, your obedient servant,

E. O. MATTHEWS,
Chief of Bureau Yards and Docks.

The SECRETARY OF THE NAVY.

No. 1.—*Report of expenditures at navy-yards, stations, and Naval Home for the year ended June 30, 1895.*

Yards and stations.	Appropriations.					
	Yard improvements and Naval Home.	Repairs and preservation.	General maintenance.	Civil establishment.	Contingent.	Total.
Portsmouth, N. H	$5,294.32	$13,933.38	$19,087.23	$5,318.00	.....	$43,632.93
Boston, Mass	15,407.44	27,420.05	26,358.79	5,376.24	$8,039.50	82,602.02
New London, Conn	.....	617.84	6,157.29	.....	.....	6,775.13
New York, N. Y	105,321.03	52,862.66	49,644.55	15,920.71	.....	223,748.95
League Island, Pa	52,038.38	20,467.83	13,534.65	4,242.17	.....	90,283.03
Washington, D. C	45,878.74	36,261.34	18,276.93	4,247.34	800.98	105,465.33
Norfolk, Va	77,891.00	57,636.27	30,935.18	8,548.21	.....	175,010.66
Pensacola, Fla	.....	13,351.34	11,341.32	1,930.00	421.55	27,044.21
Mare Island, Cal	76,697.68	67,439.41	53,822.01	12,218.88	923.00	211,100.98
Sackett's Harbor, N. Y	.....	.....	.....	365.00	.....	365.00
Key West, Fla	.....	1,865.91	1,602.74	600.00	6,649.17	10,717.82
Naval Home, Philadelphia, Pa	78,188.15	.....	.....	.....	.....	78,188.15
Wharf at Erie, Pa	.....	.....	.....	.....	548.00	548.00
Port Royal, S. C	43,008.08	7,062.00	5,381.17	.....	129.82	55,581.07
Puget Sound, Wash	269,068.11	47.15	3,905.79	.....	.....	273,021.05
Total	768,792.93	298,965.18	240,047.65	58,766.55	17,512.02	1,384,084.33

No. 2—*Detailed report from navy-yards and stations of expenditures under "Repairs and preservation" during the fiscal year ended June 30, 1895.*

Objects.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.
Yard buildings	$2,943.64	$10,101.69	$225.91	$25,836.31	$4,238.39	$16,218.51
Officers' quarters	2,175.99	7,091.81	116.84	4,749.11	1,935.96	2,807.44
Wharves, bridges, landings, and boats	391.65	174.54	50.30	2,942.85	89.56	164.90
Roads, walks, gutters, and drains	1,070.93	2,358.77	103.50	880.70	4,683.97	2,693.02
Fences and walls	203.89	169.04	35.99	492.83	373.70	2,699.12
Cranes, scows, and derricks	20.72	.....	.....	1,223.75	37.42	43.45
Furnaces, forges, heating apparatus, etc	2,238.80	818.62	.....	2,534.31	1,583.02	5,783.77
Tracks and scales	.....	31.75	.....	1,158.62	18.00	3,059.00
Water and gas works, electric light, telephone, and telegraph	1,699.55	433.63	23.30	4,469.34	2,831.08	1,071.44
Dredging and scowing	.....	414.00	.....	.....	.....	1,225.42
Dry docks	6.08	1,703.32	.....	7,827.84	79.77	.....
Miscellaneous repairs	3,056.48	2,892.73	62.00	747.00	3,569.89	214.31
Repairs to dikes	.....	.....	.....	.....	1,027.07	.....
Coal	.....	1,230.15	.....	.....	.....	.....
Holiday	.....	.....	.....	.....	.....	280.96
Anchor hoy	125.65	.....	.....	.....	.....	.....
Total	13,933.38	27,420.05	617.84	52,862.66	20,467.83	36,261.34

No. 2.—*Detailed report from navy-yards and stations of expenditures under "Repairs and preservation," etc.*—Continued.

Objects.	Norfolk.	Pensacola.	Mare Island	Key West.	Port Royal.	Puget Sound.	Total.
Yard buildings	$27,250.01	$2,080.21	$17,573.74	.....	$1,003.50	.....	$107,471.91
Officers' quarters	2,487.02	1,841.89	6,363.06	$297.90	1,872.13	.....	31,739.15
Wharves, bridges, landings, and boats	8,091.37	1,530.45	1,424.12	381.61	173.24	.....	15,414.59
Roads, walks, gutters, and drains	7,452.19	1,667.27	3,530.28	.....	259.41	.....	24,700.04
Fences and walls	384.51	442.91	229.95	.....	.....	.....	5,031.94
Cranes, scows, and derricks	905.29	9.60	1,970.57	.....	.....	.....	4,210.80
Furnaces, forges, heating apparatus, etc	579.14	189.62	3,842.09	.....	21.71	.....	17,591.08
Tracks and scales	1,284.41	92.56	10,246.58	.....	.....	.....	15,890.92
Water and gas works, electric light, telephone, and telegraph	2,012.67	3,866.06	10,844.73	.....	617.28	.....	27,869.08
Dredging and scowing	2,779.78	.....	217.94	.....	.....	.....	4,637.14
Dry docks	2,429.32	21.44	10,544.95	1,186.40	1,958.34	.....	25,757.46
Miscellaneous repairs	1,980.51	1,890.88	651.41	.....	1,156.39	$47.15	16,268.75
Repairs to dikes	.....	.....	.....	.....	.....	.....	1,027.07
Coal	.....	.....	.....	.....	.....	.....	1,230.15
Holiday	.....	140.00	.....	.....	.....	.....	420.96
Anchor hoy	.....	.....	.....	.....	.....	.....	125.65
Total	57,636.22	13,772.89	67,439.42	1,865.91	7,062.00	47.15	299,386.69

No. 3.—*Detailed report of expenditures under "general maintenance" received from yards and stations during the fiscal year ended June 30, 1895.*

Objects.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.
Freight and transportation	$1.80	$20.59	.....	.....	.....	$40.30	.....
Printing, stationery, and advertising	91.37	287.22	$21.48	$1,095.92	$416.98	352.21	$1,201.63
Books, maps, models, and drawings	.....	392.16	.....	497.52	.....	.....	12.16
Purchase and repair of fire engines	614.72	.....	.....	49.85	784.80	.....	557.42
Machinery of every discription and patent rights	.....	288.05	.....	3.65	19.25	160.32	399.02
Repairs on steam engines and attendance on same	.....	.....	.....	1,667.22	.....	55.27	1,142.69
Purchase and maintenance of oxen and horses, pay of hired teams, etc	2,471.18	3,665.48	1,173.83	6,179.54	5,016.16	4,044.40	3,263.80
Carts, timber wheels, and tools of every description	578.72	1,670.49	72.57	1,493.21	5.04	1,618.81	2,083.50
Postage on letters on public service, telegrams, telephone, and post-office box	121.00	4.00	166.00	.....	.....	120.88	713.64
Furniture for Government houses and offices in navy-yards	362.11	1,025.85	6.12	1,860.94	363.33	1,467.64	780.04
Coal and other fuel	2,281.33	2,491.24	161.38	2,133.42	1,074.13	2,459.03	.....
Candles, oil, gas, and electric lighting	1,387.05	3,090.04	12.11	3,688.61	263.55	1,031.59	6,962.09
Cleaning and clearing up yards and care of buildings	2,602.62	3,679.01	1,494.05	9,241.16	909.40	5,295.51	272.91
Attendance on fires, lights, fire engines, and apparatus	2,324.85	1,339.67	.....	6,309.61	2,444.82	33.75	1,563.96
Incidental labor, not chargeable to other appropriations	2,236.55	343.04	733.50	3,077.34	.....	1,150.75	21.23
Water tax and ice	.....	3,985.55	.....	4,981.71	57.98	144.40	312.09
Tolls and ferriage	.....	.....	25.00	130.00	1,450.00	.....	95.00
Pay of watchmen	3,938.00	4,015.00	2,190.00	7,106.04	606.00	.....	11,554.00
Flags, awnings, and packing boxes	.93	61.40	1.25	128.81	123.21	302.07	.....
Rent of landings	75.00	.....	100.00	.....	.....	.....	.....
Rent of officers' quarters, Philadelphia, Pa	.....	.....	.....	.....	2,600.00	.....	.....
Miscellaneous supplies	.....	.....	.....	.....	.....	.....	.....
Total	19,087.23	26,358.79	6,157.29	49,644.55	16,134.65	18,276.93	30,935.18

No. 3.—*Detailed report of expenditures under "general maintenance," etc.*—Continued.

Objects.	Pensacola.	Mare Island.	Key West.	Port Royal.	Puget Sound.	Total.
Freight and transportation	.....	$1,648.44	$34.18	$25.75	$2.85	$1,773.91
Printing, stationery, and advertising	$156.56	527.13	10.47	288.97	622.43	5,072.37
Books, maps, models, and drawings	.....	.....	.....	.....	.....	901.84
Purchase and repair of fire engines	64.51	1,273.04	.....	241.70	.....	3,586.04
Machinery of every description and patent rights	169.18	.....	.....	62.25	.....	1,101.72
Repairs on steam engines and attendance on same	199.79	500.93	.....	21.50	.....	3,587.40
Purchase and maintenance of oxen and horses, pay of hired teams, etc	2,268.66	8,075.18	.....	566.08	.....	36,724.31
Carts, timber wheels, and tools of every description	487.45	1,436.90	1.83	16.10	101.85	9,566.47
Postage on letters on public service, telegrams, telephone, and post-office box	.....	3,656.90	63.50	206.00	.....	5,051.92
Furniture for Government houses and offices in navy-yards	140.11	1,093.38	41.00	1,273.95	316.50	8,730.97
Coal and other fuel	217.42	6,722.79	.....	1,067.05	.....	18,607.79
Candles, oil, gas, and electric lighting	147.78	1,495.18	4.35	232.83	80.50	18,395.68
Cleaning and clearing up yards and care of buildings	581.35	6,455.99	.....	320.00	.....	30,852.00
Attendance on fires, lights, fire engines, and apparatus	1,265.53	7,885.69	11.61	255.00	.....	23,434.49
Incidental labor, not chargeable to other appropriations	78.24	1,439.94	.....	392.41	2,781.66	12,254.66
Water tax and ice	180.32	6,723.96	40.80	104.29	.....	16,531.10
Tolls and ferriage	60.00	2,760.00	.....	72.50	.....	4,592.50
Pay of watchmen	5,314.40	2,048.88	1,395.00	.....	.....	38,167.32
Flags, awnings, and packing boxes	10.02	77.68	.....	207.39	.....	912.76
Rent of landings	.....	.....	.....	.....	.....	175.00
Rent of officers' quarters, Philadelphia, Pa	.....	.....	.....	.....	.....	2,600.00
Miscellaneous supplies	.....	.....	.....	27.40	.....	27.40
Total	11,341.32	53,822.01	1,602.74	5,381.17	3,905.79	242,647.65

No. 4.—*Estimates received from navy-yards, stations, and Naval Home for fiscal year ending June 30, 1897.*

Yards and stations.	Appropriations.				
	Yard improvements.	Repairs and preservation.	General maintenance.	Civil establishment.	Total.
Portsmouth, N. H	$200,000.00	$16,825.00	$20,224.00	$5,885.00	$242,934.00
Boston, Mass	774,275.00	40,000.00	29,825.00	7,424.25	851,524.25
New London, Conn	.....	1,600.00	6,650.00	.....	8,250.00
New York, N. Y	1,404,714.64	184,589.00	87,800.00	28,370.38	1,705,474.02
League Island, Pa	1,556,552.60	29,324.62	26,165.75	7,040.00	1,619,082.97
Washington, D. C	112,080.65	31,650.00	21,700.00	5,545.25	170,975.90
Norfolk, Va	1,168,450.00	86,000.00	67,765.00	11,123.63	1,333,338.63
Pensacola, Fla	.....	66,544.63	21,170.65	2,488.32	90,203.60
Mare Island, Cal	1,253,857.14	115,226.23	101,420.98	20,718.92	1,491,223.27
Sacketts Harbor, N. Y	.....	228.00	.....	365.00	593.00
Key West, Fla	627,900.00	3,218.05	2,347.50	600.00	634,065.55
Naval Home, Philadelphia, Pa	79,819.00	.....	.....	.....	79,819.00
Port Royal, S. C	577,341.33	7,800.00	14,300.00	6,141.20	605,582.53
Puget Sound, Wash	426,965.69	4,900.00	28,433.44	3,526.00	463,825.13
Total	8,181,956.05	587,905.53	427,802.32	99,227.95	9,296,891.85

No. 5.—*Detailed estimates from yards and stations for works of improvement for the fiscal year ending June 30, 1897.*

Yards, stations, and objects.	Estimates.	Total.
PORTSMOUTH, N. H.		
Timber dry dock, for first year	$200,000.00	$200,000.00
BOSTON, MASS.		
Cart shed (alteration of building No. 56)	4,500.00	
Wharf No. 4 (reconstruction)	15,000.00	
Building No. 25 (removal)	25.00	
Building No. 41	.....	
Scale house wharf, No. 1	250.00	
Electric-light plant boilers	4,500.00	
Buildings Nos. 44, 45, 46, and 89 (removal)	.....	
Dry dock	750,000.00	774,275.00
NEW YORK, N. Y.		
Workshop for Yards and Docks department	70,000.00	
Wing and quay walls, Dry Dock No. 3	60,000.00	
Grading and paving, sidewalks, etc	122,931.00	
Quay wall coal dock, 800 feet	116,347.00	
Quay wall from tug pier to granite dock, 550 feet	60,000.00	
Extension of storehouse No. 33	58,789.00	
Construction and Repair workshop between timber docks	85,240.00	
Floating derrick for handling guns	60,000.00	
Extension of railroad system	27,293.00	
Building on cob dock for ordnance material	65,000.00	
Dredging of wall about channel	30,000.00	
Dredging Whitney Basin	55,000.00	
Extending copper and blacksmith shop No. 28	41,906.53	
Pier and drawbridge across Wallabout	120,000.00	
Addition to commandant's house	16,000.00	
Quay wall cob dock wall about	123,500.00	
Pier to port warden's line cob dock	98,342.86	
Quay wall, Whitney Basin, 1,250 feet	104,365.25	
Floor for building No. 114	5,000.00	
First floor for No. 115	5,000.00	
Building No. 116	30,000.00	
To complete Dry Dock No. 3	50,000.00	1,404,714.64
LEAGUE ISLAND, PA.		
New dry dock	634,107.55	
Widening entrance of dry dock and lengthening caisson	55,000.00	
Sea wall, 200 linear feet	20,000.00	
Steam generator for heating apparatus and electric plant	4,000.00	
Pier from eastern end of sea wall east of Broad street	120,000.00	
Dredging and filling in	30,000.00	
Water-closets for yard	5,580.00	
Widening and strengthening dikes, 9,330 linear feet	19,290.10	
One wing of Steam Engineering shops	213,000.00	
Light retaining wall from site of new building slips toward lower end of island	37,500.00	
Traveling crane around dry dock	64,000.00	
Putting in new curbing and resetting pavement on Broad street	9,000.00	
Railroad track	8,046.01	
Two 20-ton cranes and four 12-ton cranes	15,618.94	
Lightning rods	2,000.00	
Sidewalks	5,500.00	
West wall of causeway, 1,370 feet	135,630.00	
Three new officers' quarters	35,000.00	
Commandant's office	31,400.00	
100 feet plate-bending shop	75,000.00	
One building slip	35,000.00	
Weighing scales	1,880.00	1,556,552.60
WASHINGTON, D. C.		
Roof trusses and roof for entire quadrangle building	59,411.77	
Alterations north end of west side of quadrangle building	15,657.44	
Surfacing parts of the yard filled in	4,000.00	
150-ton railroad scales	1,865.78	
Repairing and renovating commandant's office	4,810.84	
Raising east wall and building sentry boxes at east gate and south end	4,202.00	
Dredging in front of new part of sea wall	3,861.00	
New scale house near wagon scales	1,271.82	
Building for paint shop and inflammable material	5,000.00	
Changing electric plant of yard	12,000.00	112,080.65

No. 5.—*Detailed estimates from yards and stations, etc.*—Continued.

Yards, stations, and objects.	Estimates.	Total.
NORFOLK, VA.		
New ship fitters' shop	$215,200.00	
Store shed between dry docks	18,750.00	
Extension of quay wall	100,000.00	
Wharf south of timber dry dock	43,000.00	
Repairs to wharf north of timber basin	18,000.00	
Toward converting timber basin into fitting basin	100,000.00	
New dry dock	600,000.00	
Stand pipe and foundations for water system	13,000.00	
New paint shop	30,000.00	
Boilers for electric plant (including shed and connections)	9,000.00	
New locomotive	4,500.00	
Derrick locomotive car	7,000.00	
Extension and repair of roads	10,000.00	
		$1,168,450.00
PORT ROYAL, S. C.		
Purchase of property	25,000.00	
Breakwater	33,371.07	
Tarring dry dock	342.93	
Chemical fire engine	650.00	
Lightning conductors	532.08	
Hospital	4,104.75	
Artesian well	75,000.00	
Dredging channel opposite station	429,040.50	
Hand wharf crane	1,800.00	
Railway track scales	500.00	
Condensing plant	3,000.00	
Steel tower and tank	4,000.00	
		577,341.33
KEY WEST, FLA.		
Sea wall, coal-shed lot to custom-house lot	1,400.00	
Sea wall, machine-shop lot to boundary on Eaton street	2,000.00	
Dredging along wharf and inside of L	3,000.00	
Clearing Mallory lot	500.00	
Moving officers' quarters	1,000.00	
New machine shop	20,000.00	
Dry dock	600,000.00	
		627,900.00
MARE ISLAND, CAL.		
Extension of the quay wall	30,000.00	
Free bridge between Vallejo and the yards	205,060.00	
Moving back ferry slip, alternative with above $73,754.89.		
Stone dock	.....	
Guard chain, about	1,470.57	
Grading and paving, about	30,445.93	
New dry dock	900,000.00	
Yard roads	13,827.14	
Renewing board sidewalks	5,684.22	
Ship-fitters' shed	30,000.00	
Storage shed for construction	10,138.38	
Yard chapel	8,000.00	
Dispensary and medical storehouse	14,385.07	
Greenhouse for nursery	4,845.83	
		1,253,857.14
PUGET SOUND, WASH.		
Wharf at dry dock	218,494.00	
Shops at dry dock	57,082.65	
Brick storehouse	19,904.00	
Electric-light plant	8,302.00	
Officers' quarters	11,000.00	
Two steel tanks	11,979.99	
Water main	3,624.95	
Railroad track	6,610.60	
Locomotive crane	55,000.00	
Roads	15,707.50	
Grading	10,010.00	
Clearing station	9,250.00	
		426,965.69
NAVAL HOME, PHILADELPHIA, PA.	.....	79,819.00
ALGIERS (LA.) DRY DOCK (total estimated cost, $1,250,000)	.....	200,000.00
Grand total	.....	8,381,956.05

-Detailed estimates from navy-yards and stations for "repairs and preservation" for the fiscal year ending June 30, 1897.

Objects.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.
ldings	$6,000.00	$10,000.00	$250.00	$121,514.00	$14,304.67	$6,000.00	$20,000.00
quarters	1,000.00	3,000.00	450.00	5,907.00	1,222 00	3,000.00	3,000.00
, bridges, landnd boats	1,500.00	1,500.00	100.00	12,990.00	349.60	250.00	20,000.00
walks, gutters, ins	2,000.00	10,000.00	150.00	3,130.00	4,465.90	5,000.00	10,000 00
nd walls	500.00	500.00	50.00	1,000.00	2,549.50	1,000.00	500.00
scows, and der-	1,000.00	500.00	.....	15,576.00	735.80	200.00	1,000.00
, forges, heating tus, etc	1,500.00	3,000.00	50.00	7,203.00	915.42	6,000.00	2,000.00
nd scales	25.00	500.00	.....	1,689.00	203.73	5,000.00	2,500.00
id gas works	2,000.00	2,500.00	50.00	4,240.00	.....	5,000.00	2,000.00
; and scowing	.....	1,000.00	.....	.....	.....	.....	5,000.00
s	300.00	5,000.00	.....	7,140.00	.....	.....	10,000.00
ieous repairs	1,000.00	2,500.00	500.00	4,200.00	.....	200.00	10,000.00
.....	.....	.....	.....	.....	4,578.00	.....	.....
al	16,825.00	40,000.00	1,600.00	184,589.00	29,324.62	31,650.00	86,000.00

Objects.	Pensacola.	Mare Island.	Sacketts Harbor.	Key West.	Port Royal.	Puget Sound.	Total.
ldings	$9,744.94	$48,390.36	.....	$1,153.00	$1,600.00	$500.00	$239,456.97
quarters	6,525.36	11,570.98	.....	540.00	800.00	750.00	37,765.34
, bridges, landnd boats	18,657.39	7,472.59	.....	.....	700.00	500.00	64,019.58
alks, gutters, and	2,416.22	22,550.86	.....	308.25	1,200.00	250.00	61,471.23
nd walls	2,902.48	1,684.29	.....	.....	400.00	100.00	11,186.27
scows, and der-	2,166.01	1,645.16	.....	.....	200.00	250.00	23,272.97
, forges, heating tus, etc	468.45	4,647.61	.....	.....	400.00	200.00	26,384.48
nd scales	1,151.88	1,266.38	.....	.....	200.00	100.00	12,635.99
id gas works	3,149.02	1,460.96	.....	.....	300.00	250.00	20,949.98
; and scowing	15,720.00	850.00	.....	.....	.....	.....	22,570.00
s	718.00	7,187.04	.....	.....	600.00	1,000.00	31,945.04
ieous repairs	2,924.88	6,500.00	$228.00	1,216.80	1,400.00	1,000.00	31,069.68
.....	.....	.....	.....	.....	.....	.....	4,578.00
al	66,544.63	115,226.23	228.00	3,218.05	7,800.00	4,900.00	587,905.53

No. 7.—*Detailed estimate for "general maintenance" received from yards and stations for the fiscal year ending June 30, 1897.*

Objects.	Portsmouth.	Boston.	New London.	New York.	League Island.	Washington.	Norfolk.	Pensacola.	Mare Island.	Key West.	Port Royal.	Puget Sound.	Total.
Freight and transportation	$25.00	$25.00	.....	$400.00	.....	$50.00	$100.00	$25.00	$3,801.12	$50.00	$100.00	$50.00	$4,626.12
Printing, stationery, and advertising	300.00	300.00	$50.00	1,500.00	$471.43	300.00	500.00	254.50	1,000.00	15.00	250.00	1,000.00	5,940.93
Books, maps, models, and drawings	50.00	1,000.00	.....	1,000.00	.....	25.00	500.00	68.00	2,128.24	.....	150.00	100.00	5,021.24
Purchase and repair of fire engines	100.00	.....	.....	500.00	187.00	25.00	500.00	2,032.10	3,067.00	.....	300.00	.....	6,711.10
Machinery of every description and patent rights	50.00	.....	100.00	8,000.00	375.00	150.00	1,000.00	171.00	7,230.00	.....	600.00	.....	17,676.00
Repairs on steam engines and attendance on same	.....	.....	.....	8,000.00	1,461.76	50.00	8,000.00	1,250.82	5,138.48	.....	500.00	.....	24,401.06
Purchase and maintenance of oxen and horses, pay of hired teams, etc	4,000.00	5,000.00	1,200.00	16,000.00	8,848.74	5,000.00	15,450.00	2,069.59	16,783.10	.....	800.00	.....	75,151.43
Carts, timber wheels, and tools of every description	500.00	2,000.00	250.00	8,000.00	1,317.80	2,500.00	5,000.00	1,090.26	4,576.88	20.00	400.00	300.00	25,954.94
Postage on letters on public service and telegrams, telephones, and post-office box	124.00	50.00	150.00	300.00	.....	150.00	25.00	25.00	4,131.36	67.00	100.00	50.00	5,172.36
Furniture for Government houses and offices in navy-yards	500.00	1,000.00	100.00	5,000.00	2,278.40	2,500.00	2,000.00	1,678.00	2,779.68	.....	2,500.00	2,500.00	22,836.08
Coal and other fuel for Yards and Docks purposes	2,500.00	4,000.00	165.00	7,000.00	2,026.50	2,500.00	3,500.00	264.50	12,725.00	.....	1,200.00	10,750.00	46,631.00
Candles, oil, and gas	1,500.00	200.00	20.00	300.00	1,068.60	1,000.00	5,000.00	274.95	1,650.00	117.50	600.00	200.00	11,931.05
Cleaning and clearing up yards and care of buildings	2,000.00	4,000.00	1,500.00	8,000.00	5,847.00	5,500.00	5,760.00	1,672.77	14,349.04	.....	1,800.00	2,278.64	52,707.45
Attendance on fires, lights, fire engines, and apparatus	2,500.00	2,000.00	.....	5,000.00	229.20	50.00	3,676.00	2,353.76	11,026.48	.....	900.00	5,034.80	32,770.24
Incidental labor, not chargeable to other appropriations	2,000.00	500.00	750.00	3,000.00	.....	1,500.00	5,000.00	.....	1,000.00	.....	1,200.00	3,000.00	17,950.00
Water tax and ice	.....	4,500.00	25.00	8,000.00	.....	.....	.....	156.80	4,800.00	73.00	600.00	.....	18,154.80
Tolls and ferriage	25.00	.....	25.00	200.00	.....	.....	150.00	81.00	2,760.00	.....	.....	.....	3,241.00
Pay of watchmen	4,000.00	5,000.00	2,190.00	7,200.00	1,446.00	.....	11,504.00	7,504.40	2,204.60	1,995.00	2,200.00	2,920.00	48,164.00
Flags, awnings, and packing boxes	50.00	250.00	25.00	400.00	608.32	400.00	100.00	198.20	270.00	10.00	100.00	250.00	2,661.52
Rent of landings	.....	.....	100.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	100.00
Total	20,224.00	29,825.00	6,650.00	87,800.00	26,165.75	21,700.00	67,765.00	21,170.65	101,420.98	2,347.50	14,300.00	28,433.44	427,802.32

No. 8.—*Report showing amount expended during the fiscal year ended June 30, 1895, from appropriations pertaining to the Bureau of Yards and Docks for civilians employed on clerical duty or in any other capacity than ordinary mechanics and workingmen at the several navy-yards and stations, and submitting estimate for such civilian employees for the fiscal year 1897, in compliance with the third section of naval appropriation act approved January 30, 1885 (vol. 23, Stat. L., p. 295), for a year of 365 days.*

Navy-yards and rating and rate of pay.	Amount paid to civilians employed during the fiscal year ended June 30, 1895.	Estimate for civilian employees for the fiscal year ending June 30, 1897.	
		Rate of pay.	Amount.
PORTSMOUTH, N. H.			
Clerk, at $1,400 per annum	$1,400.00	$1,400.00	$1,400.00
Mail messenger, at $2 per diem *	720.00	2.00	730.00
Messenger, at $600 per annum	600.00	600.00	600.00
Foreman laborer and head teamster, at $4 per diem *	924.00	4.00	1,460.00
Pilot, at $3 per diem *	1,074.00	3.00	1,095.00
Janitor, at $600 per annum	600.00	600.00	600.00
Total	5,318.00	.....	5,885.00
BOSTON, MASS.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Foreman laborer, at $4 per diem	1,248.00	4.00	1,252.00
Messenger to commandant, at $1.76 per diem	549.12	1.76	550.88
Messenger, at $1.76 per diem	549.12	1.76	550.88
Mail messenger, at $2 per diem *	730.00	2.00	730.00
Writer, at $900 per annum	900.00	900.00	900.00
Draftsman, at $4.56 per diem	1,422.72	.....	.....
Electrician, at $4 per diem	756.00	.....	.....
Clerk labor board, at $2.80 per diem	218.40	.....	.....
Total	7,773.36	.....	5,383.76
BROOKLYN, N. Y.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1,017.25 per annum	1,017.25	1,017.25	1,017.25
Two masters of tugs, at $1,500 each per annum	3,000.00	1,500.00	3,000.00
Two writers, at $900 each per annum	1,800.00	900.00	1,800.00
Foreman laborer, at $4.50 per diem	1,011.93	4.50	1,408.50
Mail messenger, at $2 per diem *	730.00	2.00	730.00
Two messengers, at $2.25 each per diem	1,383.75	2.25	1,408.50
Draftsman, at $5 per diem	1,540.00	5.00	1,565.00
Quarterman, at $3 per diem	937.50	3.00	939.00
Superintendent of teams, or quarterman, at $4 per diem	1,196.00	4.00	1,252.00
Messenger to commandant, at $2.25 per diem *	704.25	2.25	821.25
Electrician, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Leveler, at $4 per diem	1,224.00	.....	.....
Rodman, at $3 per diem	822.00	.....	.....
Subinspector, at $3.50 per diem	1,020.25	.....	.....
Two night inspectors, at $4 each per diem	610.50	.....	.....
Mechanical draftsman, at $5.04 per diem	309.96	.....	.....
Mechanical draftsman, at $4 per diem	1,044.00	.....	.....
Ten subinspectors, at $4 each per diem	2,454.00	.....	.....
Total	23,405.39	.....	16.541.50
SACKETTS HARBOR, N. Y.			
Ship keeper, at $1 per diem	365.00	1.00	365.00
LEAGUE ISLAND, PA.			
Clerk, at $1,400 per annum	1,396.16	1,400.00	1,400.00
Writer and telegraph operator, at $1,000 per annum	1,000.00	1,000.00	1,000.00
Messenger, at $2 per diem	624.00	2.00	626.00
Foreman laborer, at $4 per diem	1,222.00	4.00	1,252.00
Leveler, at $3.84 per diem	1,059.84	.....	.....
Subinspector, at $3.50 per diem	1,092.00	.....	.....
Rodman, at $2.56 per diem	248.32	.....	.....
Draftsman, at $5 per diem	1,478.75	.....	.....
Electrician, at $4 per diem	698.00	.....	.....
Total	8,819.07	.....	4,278.00

* Sundays included.

No. 8.—*Report showing amount expended during the fiscal year, etc.*—Continued.

Navy-yards and rating and rate of pay.	Amount paid to civilians employed during the fiscal year ended June 30, 1895.	Estimate for civilian employees for the fiscal year ending June 30, 1897.	
		Rate of pay.	Amount.
WASHINGTON, D. C.			
Clerk, at $1,400 per annum	$1,400.00	$1,400.00	$1,400.00
Messenger, at $2 per diem	624.00	2.00	626.00
Foreman laborer, at $4 per diem	1,248.00	4.00	1,252.00
Electrician, at $1,000 annum	974.24	1,000.00	1,000.00
Trackmaster, at $3.04 per diem	1,005.86	.....	.....
Quartermaster joiner, at $3.50 per diem	336.00	.....	.....
Total	5,588.20	.....	4,278.00
NORFOLK, VA.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1,017.25 per annum	1,017.16	1,017.25	1,017.25
Writer, at $1,000 per annum	1,000.00	1,000.00	1,000.00
Foreman laborer, at $4 per diem	1,248.00	4.00	1,252.00
Mail messenger, at $2 per diem *	730.00	2.00	730.00
Two messengers, at $2 each per diem	1,248.00	2.00	1,252.00
Pilot, at $2.26 per diem	705.12	2.26	707.38
Electrician, at $1,200 per annum	1,199.94	1,200.00	1,200.00
Two iraftsmen, at $3.52, $3.04, and $5.04 per diem	1,312.63	.....	.....
Two quarterman joiners, at $3.76 and $4.50 per diem	968.89	.....	.....
Total	10,829.74	.....	8,558.63
PENSACOLA, FLA.			
Clerk, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Mail messenger, at $2 per diem *	730.00	2.00	730.00
Total	1,930.00	.....	1,930.00
KEY WEST, FLA.			
Messenger, at $600 per annum	600.00	600.00	600.00
PORT ROYAL, S. C.			
Draftsman, at $5 per diem	850.00	.....	.....
Rodman and inspector, at $2.40 per diem	930.60	.....	.....
Skilled laborer, at $2.48 per diem	1,131.50	.....	.....
Inspector of concrete, at $2.40 per diem	111.00	.....	.....
Total	3,023.10	.....	.....
MARE ISLAND, CAL.			
Clerk, at $1,400 per annum	1,400.00	1,400.00	1,400.00
Writer, at $1,017.25 per annum	1,000.53	1,017.25	1,017.25
Foreman mason, at $6 per diem	1,866.75	6.00	1,878.00
Foreman laborer, at $5.50 per diem	1,716.00	5.50	1,721.50
Pilot, at $4.80 per diem	1,497.60	4.80	1,502.40
Draftsman, at $5 per diem	1,560.00	5.00	1,565.00
Mail messenger, at $2 per diem*	730.00	2.00	730.00
Messenger, at $2 per diem	624.00	2.00	626.00
Electrician, at $1,200 per annum	1,200.00	1,200.00	1,200.00
Messenger and lamplighter, at $2 per diem	624.00	2.00	626.00
Machinist in charge, at $4.50 per diem	1,386.00	.....	.....
Quarterman joiner, at $4.24 per diem	1,287.90	.....	.....
Rodman, at $2.48 per diem	771.28	.....	.....
Telegraph operator, at $3.28 per diem	1,023.36	.....	.....
Janitor, at $2.48 per diem	773.76	.....	.....
Total	17,461.18	.....	12,266.15
PORT ORCHARD, PUGET SOUND, WASH.			
Rodman, at $3 per diem	928.50	.....	.....
Assistant draftsman, at $5 per diem	1,582.50	.....	.....
Nine subinspectors, at $3.50 per diem each	7,034.98	.....	.....
Writer and skilled laborer, at $3.25 per diem	1,037.50	.....	.....
Photographer, at $4 per diem	130.00	.....	.....
Total	10,713.48	.....	.....

* Sundays included.

Recapitulation of expenditures for certain employees for the fiscal year ended June 30, 1895, and estimates for the fiscal year ending June 30, 1897, per act approved January 30, 1885 (Stat. L., vol. 23, p. 295).

Navy-yards and stations.	Expenditures, 1894-95.	Estimates, 1896-97.
Portsmouth, N. H.	$5,318.00	$5,885.00
Boston, Mass.	7,773.36	5,383.76
Brooklyn, N. Y.	23,405.39	16,541.50
Sacketts Harbor, N. Y.	365.00	365.00
League Island, Pa.	8,819.07	4,278.00
Washington, D. C.	5,588.20	4,278.00
Norfolk, Va.	10,829.74	8,558.63
Pensacola, Fla.	1,930.00	1,930.00
Key West, Fla.	600.00	600.00
Port Royal, S. C.	3,023.10	.....
Mare Island, Cal.	17,461.18	12,266.15
Port Orchard, Puget Sound, Wash.	10,713.48	.....
Total	95,826.52	60,086.04
SUBMITTED.		
Boston, Mass.:		
Electrician, at $1,200 per annum	1,200.00	1,200.00
Master of tug, at $1,200 per annum	1,200.00	1,200.00
League Island, Pa.:		
Electrician, at $1,200 per annum	1,200.00	1,200.00
Washington, D. C.:		
Electrician, at $1,200 per annum, $200 additional	.....	200.00
Total	.....	63,886.04

No. 9.—*Statement of the appropriations for the Bureau of Yards and Docks for the fiscal year ended June 30, 1895, and prior years, showing the amounts expended under each specific head of appropriation and the balances remaining unexpended June 30, 1895, as required by section 429, Revised Statutes.*

Appropriation for general maintenance, 1895	$250,000.00
Expended from July 1, 1894, to June 30, 1895	224,689.20
Balance on hand July 1, 1895	25,310.80
Which will be entirely expended.	
Appropriation for repairs and preservation, 1895	300,000.00
Expended from July 1, 1894, to June 30, 1895	258,950.16
Balance on hand July 1, 1895	41,049.84
Which will be entirely expended.	
Appropriation for civil establishment, 1895	61,494.54
Expended from July 1, 1894, to June 30, 1895	59,116.07
Balance on hand July 1, 1895	2,378.47
Which will revert to the Treasury.	
Appropriation for contingent, 1895	15,000.00
Expended from July 1, 1894, to June 30, 1895	9,161.69
Balance on hand July 1, 1895	5,838.31
After liabilities are paid balance will revert to Treasury.	
Appropriation for Naval Home, Philadelphia, Pa., 1895	80,465.00
Expended from July 1, 1894, to June 30, 1895	67,654.07
Balance on hand July 1, 1895	12,810.93
After liabilities are paid balance will revert to Treasury.	
Appropriation, navy-yard, Portsmouth, N. H.:	
For coal pocket	6,500.00
For construction of boiler house for buildings Nos. 45 and 46	7,000.00
For construction of boiler house, building No. 10	15,000.00
	28,500.00
Expended from July 1, 1892, to June 30, 1895	19,084.86
Balance on hand July 1, 1895	9,415.14
Which will be *entirely expended.*	

Appropriation, navy-yard, Boston, Mass.:	
For electric-light plant	$15,000.00
Expended from July 1, 1894, to June 30, 1895	15,000.00
Appropriation, navy-yard, Brooklyn, N. Y.:	
For quay wall on cob dock	100,000.00
For quay wall extension on cob dock	30,000.00
For gate at Sands street	5,000.00
Expended from July 1, 1890, to June 30, 1895	135,000.00
Appropriation, navy-yard, Brooklyn, N. Y.:	
For extensions and improvements	593,860.33
Expended from July 1, 1892, to June 30, 1895 ($20,000 being in hands of paymaster at New York)	279,160.71
Balance on hand July 1, 1895	314,699.62
Which will be entirely expended.	
Appropriation, navy-yard, Brooklyn, N. Y.:	
For caisson for granite dock	35,000.00
For renewing buildings numbered 114, 115, and 116 (Construction and Repair)	70,000.00
For grading, paving, and laying of sewers	10,000.00
For quay wall inside Whitney Basin	25,000.00
	140,000.00
Expended from July 1, 1894, to June 30, 1895	3,736.26
Balance on hand July 1, 1895	136,263.74
Which will be entirely expended.	
Appropriation, navy-yard, Brooklyn, N. Y.:	
For repairs and improvements	300,000.00
Expended from July 1, 1893, to June 30, 1895	30,771.61
Balance on hand July 1, 1895	269,228.39
Which will be entirely expended.	
Appropriation, navy-yard, League Island, Pa.:	
For dredging and filling in	75,000.00
For dredging and filling in and paving and improvement of grounds	25,000.00
For extending permanent sea wall	25,000.00
For west dry-dock pier	87,441.62
For ripraps for protection wall	9,150.00
For construction of light retaining wall	25,000.00
For sewers and flushing tank	5,685.00
	252,276.62
Expended from July 1, 1890, to June 30, 1895	251,980.20
Balance on hand July 1, 1895	296.42
Which will be entirely expended.	
Appropriation, navy-yard, League Island, Pa.:	
For extension of protection wall	20,000.00
For extension of light retaining wall	15,000.00
For ripraps for Broad street wharf	6,500.00
For branch sewer	2,100.00
	43,600.00
Expended from July 1, 1892, to June 30, 1895	42,670.00
Balance on hand July 1, 1895	930.00
Which will be entirely expended.	
Appropriation, navy-yard, League Island, Pa.:	
For construction of sea wall	20,000.00
For one pair shear legs	18,000.00
Toward the construction of east dry-dock pier	40,000.00
	78,000.00
Expended from July 1, 1893, to June 30, 1895	67,078.16
Balance on hand July 1, 1895	10,921.84
Which will be entirely expended.	

Appropriation, navy-yard, League Island, Pa.:	
For continuation of sea wall	$20,000.00
For completion of shear legs	11,900.00
For an electric-light plant	10,000.00
For complete east dry dock pier	40,000.00
	81,900.00
Expended from July 1, 1894, to June 30, 1895	28,513.92
Balance on hand July 1, 1895	53,386.08
Which will be entirely expended.	
Appropriation, navy-yard, Washington, D. C.:	
For new timber shed for ordnance purposes	7,500.00
For convertion of mold loft building into a forge shop	8,000.00
For reconstruction of forge shop, with foundations for crane columns	10,000.00
For 1 wrecking car, with 15-ton crane attachment	2,500.00
For installation of electric lights in breech-mechanism shop	2,500.00
	30,500.00
Expended from July 1, 1893, to June 30, 1895	27,166.68
Balance on hand July 1, 1895	3,333.32
Which will be entirely expended.	
Appropriation, navy-yard, Washington, D. C.:	
For extension of yard wall through marsh	24,693.00
For retaining wall for and raising lower floor, store No. 10	10,915.00
For locomotive wrecking car	7,500.00
Completing conversion of mold-loft building into forge shop	6,936.00
	50,044.00
Expended from July 1, 1894, to June 30, 1895	38,226.95
Balance on hand July 1, 1895	11,817.05
Which will be entirely expended.	
Appropriation, navy-yard, Norfolk, Va.:	
For floating gate for granite dry dock	$25,000.00
For coal shed	6,500.00
	31,500.00
Expended from July 1, 1893, to June 30, 1895	31,358.38
Balance on hand July 1, 1895	141.62
Which will be entirely expended.	
Appropriation, navy-yard, Norfolk, Va.:	
For extension of quay wall	$15,000.00
For extension of water system	8,000.00
	23,000.00
Expended from July 1, 1893, to June 30, 1895	21,361.70
Balance on hand July 1, 1895	1,638.30
Which will be entirely expended.	
Appropriation, navy-yard, Norfolk, Va.:	
For extension of electric plant	8,000.00
For sewers, drains, and water-closets in offices and shops	15,000.00
For continuing quay wall	15,000.00
For construction of a fireproof storehouse to replace the storehouse building numbered 15, destroyed by fire in December, 1893	72,365.77
	110,365.77
Expended from July 1, 1894, to June 30, 1895	55,501.07
Balance on hand July 1, 1895	54,864.70
Which will be entirely expended.	

Appropriation, construction of dock, Port Royal, S. C.:	
Toward the construction of a timber dry dock	$200,000.00
To continue the construction of a timber dry dock	150,000.00
For the completion of a timber dry dock	150,000.00
	500,000.00
Expended from July 1, 1890, to June 30, 1895	432,345.41
Balance on hand July 1, 1895	67,654.59
Which will be entirely expended.	
Appropriation for telephone line (under construction of dock)	1,500.00
Expended from July 1, 1892, to June 30, 1895	1,308.25
Balance on hand July 1, 1895	191.75
Which will be carried to the surplus fund.	
Appropriation, naval station, Port Royal, S. C.:	
For sewerage	846.00
For officers' quarters, $7,000, and $5,000 transferred	12,000.00
For boathouse	1,000.00
For barn	750.00
For completing officers' quarters heretofore authorized	2,500.00
	17,096.00
Expended from July 1, 1893, to June 30, 1895	17,090.75
Balance on hand July 1, 1895	5.25
Which will be entirely expended.	
Appropriation, naval station, Port Royal, S. C.:	
For repairs to main wharf	18,368.00
Expended from July 1, 1894, to June 30, 1895	295.00
Balance on hand July 1, 1895	18,073.00
Which will be entirely expended.	
For paying Justin McCarthy, contractor, for building the dry dock at Port Royal, S. C., in full for loss and damage caused by the cyclone of August 27 and 28, 1893, as ascertained by the Department:	
Amount appropriated paid to the contractor by order of the Department	18,521.42
Appropriation, dry dock, Algiers, La.:	
Toward the establishment of a dry dock on the Government reservation near Algiers, La	25,000.00
For the purpose of completing the purchase of additional lands necessary for the establishment of a dry dock at Algiers, La	23,025.03
	48,025.03
Expended from July 1, 1893, to June 30, 1895	46,312.83
Balance on hand July 1, 1895	1,712.20
Which will be entirely expended.	
Appropriation, navy-yard, Mare Island, Cal.:	
For extension of quay wall	80,000.00
Expended from July 1, 1891, to June 30, 1895	79,865.00
Balance on hand July 1, 1895	135.00
Which will be entirely expended.	
Appropriation, navy-yard, Mare Island, Cal.:	
For one 12-ton pillar wharf crane	3,800.00
Expended from July 1, 1890, to June 30, 1895	2,032.00
Balance on hand July 1, 1895	1,768.00
Which will be entirely expended.	

Appropriation, navy-yard, Mare Island, Cal.:	
For boat landing	$3,000.00
For widening gauge of railroad track	6,500.00
For removal and reconstruction of return wall sectional dry dock basin	11,285.24
For oil house for general storekeeper	8,000.00
For one locomotive for yard use	4,000.00
For strengthening sea wall	20,000.00
	52,785.24
Expended from July 1, 1890, to June 30, 1895	52,785.24
Appropriation, navy-yard, Mare Island, Cal.:	
For dredging	20,000.00
For dry-air closet	4,000.00
For new carriage house and dirt stables	3,000.00
For changes in steam-engineering building	4,797.00
For shed for bending slabs, rolls, and furnaces	6,381.00
For engine house for engine for construction and repairs	3,470.00
	41,648.00
Expended from July 1, 1893, to June 30, 1895	41,648.00
Appropriation, navy-yard, Mare Island, Cal.:	
For extending yard railroads	18,332.00
For navy-yard roads	5,000.00
For shed over galvanizing plant (C. & R.)	3,750.00
For cottage for electrician	1,937.00
	29,019.00
Expended from July 1, 1894, to June 30, 1895	19,068.72
Balance on hand July 1, 1895	9,950.28
Which will be entirely expended.	
Appropriation, increase of the Navy:	
For one traveling crane of 40 tons capacity for dry dock at navy-yard, Mare Island, Cal	60,000.00
Expended from July 1, 1892, to June 30, 1895	45,649.18
Balance on hand July 1, 1895	14,350.82
Which will be entirely expended.	
Appropriation, adjustable stern dock for naval station, Key West, Fla	30,000.00
Expended from July 1, 1889, to June 30, 1895	27,000.00
Balance on hand July 1, 1895	3,000.00
Which is held to pay reservation under contract.	
Appropriation, naval station, Key West, Fla.:	
For coaling shed	10,000.00
No expenditures had been made under this appropriation up to June 30, 1895.	
Appropriation, dry dock, Puget Sound, Washington:	
For purchase of tract of land for dry dock site, and construction of dry dock upon said land	210,000.00
To continue the construction of the dry dock	225,000.00
To continue the construction of dry dock at Port Orchard, and for erecting office buildings and other necessary structures, approaches to dry dock, quarters for civil engineer and inspector, pay of superintendents, inspectors, and draftsman, necessary dredging, cleaning, and clearing up station, incidental expenses, unforeseen emergencies, and contingent expenses	45,000.00
For continuation of dry dock, dredging, office building, and officers' quarters, to be made immediately available	260,000.00
	740,000.00
Expended from July 1, 1891, to June 30, 1895	542,708.31
Balance on hand July 1, 1895	197,291.69
Which will be entirely expended.	
Appropriation, naval station, Puget Sound, Washington:	
For artesian wells	3,500.00
No expenditures had been made under this appropriation up to June 30, 1895.	

No. 10.—*Abstract and statement of offers received for the construction of works of improvement, including labor and material, coming under the cognizance of the Bureau of Yards and Docks, as required by section 429, Revised Statutes, for fiscal year ended June 30, 1895.*

Offers for dredging at United States naval station, Port Royal, S. C., under advertisement dated July 18, 1894:

	Item 1.	Item 2.	Item 3.	Item 4.	Item 5.
R. R. Moore	$0.75	$8.00	$0.32	$7.00	$8.00 for rock. .70 for earth.

Offer rejected and proposals again invited under advertisement dated August 11, 1894. No bids received under second advertisement.

Offers for rebuilding and repairing wharves at United States Naval Home, Philadelphia, Pa., under advertisement dated August 17, 1894:

Joseph S. Allen *	$2,424.00
George C. Platt	2,620.00
J. H. Hathaway	4,590.00

Offers for installing an electric-lighting plant at United States navy-yard, Boston, Mass., under advertisement dated August 22, 1894:

Crocker-Wheeler Electric Company, by Cumner, Craig & Co., agents, incandescent lights	15,482.00
Arc lights (informal)	6,800.00
General Electric Company	15,736.00
Do	15,754.00
Do	15,433.00
Do	* 14,998.00
Berger, Rogers & Potter arc lights (informal)	5,146.00
Berger, Rogers & Potter, arc lights	18,876.00
Crescent Electric Machine Company, by Wm. D. Perry, manager (received too late)	17,453.00
Do	6,918.00

Offers for installing an electric-light plant at United States navy-yard, League Island, Pa., under advertisement dated September 19, 1894:

International Trading and Electric Company	9,737.73
Westinghouse Electric Machine Company	11,816.00
Crescent Electric Machine Company	9,580.00
George S. W. Brubaker	15,990.00
Stern & Silverman	9,575.00
Do	10,975.00
Do	14,261.00
McCay-Howard Electric Company	9,850.00
Pennsylvania General Electric Company	9,998.00
La Roche Electric Works	* † 8,875.00

Offers for construction of a protection wall at United States navy-yard, League Island, Pa., under advertisement dated October 3, 1894:

T. Benton Brown	15,500.00
Benj. Sweeten & Son	18,446.00
Joseph S. Allen *	12,943.00
Duffy & Palmer	20,962.75
Evans & Kelly	19,890.00
William A. Mundy	13,389.00
Frank C. Arthur	18,742.40

Offers for constructing shear legs at United States navy-yard, League Island, Pa., under advertisements dated October 15 and 31, 1894:

William Sellers & Co. (incorporated)	25,150.00
Philadelphia Engineering Works	22,800.00
Phœnix Iron Company	35,426.00
Weimer Machine Works	27,936.00
The Kelly Manufacturing Company	29,695.00

* Accepted.

† Lowest offer accepted and contract entered into, subsequently declared forfeited on account of failure and works having been placed in hand of a receiver, and contract awarded to the next lowest formal bidder.

Offers for constructing shear legs at United States navy-yard, League Island, Pa., etc.—Continued.

F. C. Forsaith Machine Company	$25,900.00
The Tacony Iron and Metal Company.*	21,990.00
Morgan Engineering Company	28,668.00
John Baizley	33,474.00
New Jersey Steel and Iron Company	29,553.00
I. P. Morris Company	27,675.00
Andrew H. Haig	24,000.00
F. W. Wood	34,200.00
Camden Iron Works	28,870.00

List of tenders received under Bureau's advertisement dated November 24, 1894, for objects of improvement at United States navy-yard, New York.

GARBAGE AND REFUSE CREMATORY.

	No. 1. Framed in wood.	No. 2. Framed in steel.
Thomas Dwyer, New York	$10,760	$11,160
Eagle Sanitary and Cremation Co., Iowa	6,485	6,975
Thomas H. Stanley & Co., New York	4,700	5,800
James McFarran, New York	7,600	8,100
P. J. Carlin & Co., Brooklyn, N. Y	6,200	7,200
J. M. Brosnan & Bro., New York	a 6,150	.....

a Not stated whether in wood or steel.

BENDING SHOP, BUILDING NO. 114.

Thomas Dwyer, New York, N. Y	$31,000.00
Milliken Bros., New York, N. Y	20,978.00
Manhattan Supply Company, New York, N. Y	39,618.00
Sandford & Stillman Company, Jersey City, N. J	24,608.11
Levering & Garrigues, New York, N. Y	27,839.00
Thorp & Bond, New York, N. Y	24,460.00
James McFarran, West Troy, N. Y	37,194.00
John H. O'Rouke, Brooklyn, N. Y	41,000.00
Youngstown Bridge Company, Youngstown, Ohio	22,296.00
P. J. Carlin & Co., Brooklyn, N. Y	21,894.00
J. M. Brosnan & Bro., New York	*20,000.00
Augustus Smith, New York, N. Y	24,674.00

QUAY WALL, FOOT OF MAIN STREET.

Delaware Construction Company, Wilmington, Del	per linear foot	$80.60
Wm. A. Mundy, Philadelphia, Pa	do	129.00
Manhattan Supply Company, New York, N. Y	do	134.90
Colin McLean, New York, N. Y	do	114.00
Sandford & Stillman Company, Jersey City, N. J	do	124.07
John H. O'Rouke, Brooklyn, N. Y		56,000.00
T. & A. Walsh, New York, N. Y	per linear foot	125.00
P. Sanford Ross, Jersey City, N. J	do	105.00
Jas. G. Leary, New York, N. Y	do	117.00
John McNamee, Brooklyn, N. Y	do	81.00
Frank Pidgeon, Saugerties, N. Y	do	110.00
J. M. Brosman & Bro., New York, N. Y		* 36,950.00
Stratford Hawkes & Co., Brooklyn, N. Y	per linear foot	80.43
Wm. H. Jenks, New York	do	124.00
O'Connor & Overman, New York, N. Y	do	81.90
John C. Rogers, New York	do	108.00
Spearin & Preston, New York, N. Y	do	104.00

* Accepted.

QUAY WALL, WHITNEY BASIN.

Wm. A. Mundy, Philadelphia, Pa	$40,764.00
Delaware Construction Company, Wilmington, Del	25,469.60
Manhattan Supply Company, New York, N. Y	41,996.40
Colin McLean, New York, N. Y	36,656.00
Sandford & Stillman Company, Jersey City, N. J	32,228.84
John H. O'Rouke, Brooklyn, N. Y	38,000.00
John W. Flaherty, Brooklyn, N. Y	53,721.00
James D. Leary, New York, N. Y	36.340.00
P. Sanford Ross, Jersey City, N. J	33.180.00
Spearin & Preston, New York, N. Y	35,392.00
T. & A. Walsh, New York, N. Y	37,288.00
John W. Flaherty, Brooklyn, N. Y	52,140.00
John McNamee, Brooklyn, N. Y	25,596.00
Frank Pidgeon, Sangerties, N. Y	31,600.00
J. M. Brosnan & Bro., New York, N. Y	25,280.00
Stratford, Hawkes & Co., Brooklyn, N. Y	*24,072.88
Wm. H. Jenks, New York, N. Y	39,184.00
John C. Rodgers, New York, N. Y	34,128.00

CAUSEWAY ACROSS WALLABOUT CHANNEL.

Wm. A. Mundy, Philadelphia, Pa	$108,993.00
Delaware Construction Company, Wilmington, Del	*75,168.00
Manhattan Supply Company, New York, N. Y	116,875.80
Colin McLean, New York City	98,219.55
Sandford & Stillman Company, Jersey City, N. J	88,083.05
Jas. D. Leary, New York, N. Y	108,680.00
P. Sandford Ross, Jersey City, N. J	103,455.00
T. & A. Walsh, New York, N. Y	108,680.00
John W. Flaherty, Brooklyn, N. Y	339,625.00
John H. O'Rouke, Brooklyn, N. Y	110,830.00
John McNamee, Brooklyn, N. Y	85,690.00
Frank Pidgeon, Sangerties, N. Y	107,010.00
J. M. Brosnan & Bro., New York, N. Y	79,150.25
Stratford, Hawkes & Co., Brooklyn, N. Y	76,703.00
Wm. H. Jenks, New York, N. Y	113,905.00
John C. Rodgers, New York, N. Y	101,365.00

EXTENSION OF BOILER SHOP, BUILDING No. 28.

Thomas Dwyer, New York, N. Y	$36,000.00
Milliken Bros., New York, N. Y	27,789.00
Manhattan Supply Company, New York, N. Y	46,147.00
Stanford & Stillman Company, Jersey City, N. J	32,505.23
Levering & Garrigues, New York	37,747.00
James McFarran, West Troy, N. Y	34,448.00
Thorp & Bond, New York, N. Y	30,170.00
John J. Coshman, Brooklyn, N. Y	30.447.00
Leonard Bros., Brooklyn, N. Y	*27,230.00
John H. O'Rouke, Brooklyn, N. Y	44,500.00
The Youngstown Bridge Company, Youngstown, Ohio	31,500.00
P. J. Carlin & Co., Brooklyn, N. Y	34,920.00
J. M. Brosnan & Bro., New York, N. Y	27,300.00
Joseph Coar, New York, N. Y	35,975.00

RECONSTRUCTING BUILDING No. 6.

Thomas Dwyer, New York, N. Y	$51,000.00
M. Gibbons & Son, Brooklyn, N. Y	*40,975.00
Milliken Bros., New York, N. Y	47,887.00
Manhattan Supply Company, New York, N. Y	80,720.00
John Sheehan, New Rochelle, N. Y	47,000.00
James McFarran, West Troy, N. Y	64,974.00
John Coshman, Brooklyn, N. Y	46,577.00
Leonard Bros., Brooklyn, N. Y	42,937.00
The A. W. Burritt Company, Bridgeport, Conn	49,500.00

* Accepted.

Thomas G. O'Connor, Brooklyn, N. Y.	$43,733.00
Thorp & Bond, New York, N. Y.	61,300.00
John H. O'Rouke, Brooklyn, N. Y.	59,000.00
Robert J. Mills, New York, N. Y.	54,500.00
J. R. F. Kelly & Co., New York, N. Y.	53,040.00
P. J. Carlin & Co., Brooklyn, N. Y.	49,700.00
J. M. Brosnan & Bro., New York, N. Y.	42,250.33
Joseph Coar, New York, N. Y.	55,543.00
Charles Collins, Brooklyn, N. Y.	46,511.00
Remsen & McTammany, Brooklyn, N. Y.	42,450.00

List of bids received under Bureau's advertisements dated April 20 and 27, 1895, for works of improvement at United States navy yard, Brooklyn, N. Y. Bids opened May 14, 1895.

For constructing entrance, roadway, gates, and gatehouse at Sands street:	
1. K. A. Murphy, Brooklyn, N. Y.	$37,400.00
2. Charles Hart, Brooklyn, N. Y.	33,518.00
3. John Cox, Brooklyn, N. Y.	41,337.00
4. Leonard Bros.	33,870.00
5. Michael J. Dady, Brooklyn, N. Y.	48,911.25
6. John H. O'Rouke, Brooklyn, N. Y.	35,850.00
7. P. J. Carlin, Brooklyn, N. Y.	*22,000.00
8. Thomas H. Stanley & Co., New York	34,900.00
9. Thomas Dwyer, New York	24,999.00
10. J. H. Hathaway & Co., Philadelphia, Pa.	48,269.00
For construction of storehouse for inflammable oils:	
1. J. H. Hathaway & Co., Philadelphia, Pa.	5,477.00
2. Benner & Opdyke, Philadelphia, Pa.	*4,575.00
3. The Youngstown Bridge Company, Youngstown, Ohio	5,636.00
4. Leonard Bros., Brooklyn, N. Y.	5,369.00
5. P. J. Carlin & Co., Brooklyn, N. Y.	4,900.00
6. Thomas H. Stanley & Co., New York	5,900.00
7. New Jersey Steel and Iron Company, Trenton, N. J.	6,697.00
8. Augustus Smith, New York	4,995.00
9. John Cox, Brooklyn, N. Y.	6,917.67
For construction of steel floating gate or caisson for dry dock:	
1. Fred W. Wood, Baltimore, Md.	35,000.00
2. T. S. Marvel, Newburg, N. Y.	*29,500.00
For reconstructing building No. 115:	
1. Youngstown Bridge Company, Youngstown, Ohio	39,900.00
2. Benner & Opdyke, Philadelphia, Pa.	39,163.00
3. John Cox, Brooklyn, N. Y.	48,146.00
4. Leonard Bros., Brooklyn, N. Y.	37,747.00
5. John H. O'Rouke, Brooklyn, N. Y.	44,950.00
6. James Jewkes & Son, Jersey City, N. J.	46,990.00
7. P. J. Carlin & Co., Brooklyn, N. Y.	36,800.00
8. Thomas H. Stanley & Co., New York, N. Y.	*36,060.73
9. Thomas Dwyer, New York, N. Y.	37,730.00
10. J. H. Hathaway & Co., Philadelphia, Pa.	49,894.00
11. Robert J. Mills, New York, N. Y.	46,800.00
12. New Jersey Steel and Iron Company, Trenton, N. J.	49,345.00
For constructing boundary brick wall:	
1. K. A. Murphy, Brooklyn, N. Y.	28,000.00
2. Colin McLean, New York, N. Y.	38,500.00
3. Charles Hart, Brooklyn, N. Y.	26,999.00
4. William J. Moran, New York, N. Y.	29,576.00
5. John Cox, Brooklyn, N. Y.	29,467.00
6. Leonard Bros., Brooklyn, N. Y.	28,387.00
7. David B. Hobby, Brooklyn, N. Y.	29,297.84
8. Groman Bros., South Bethlehem, Pa.	32,662.50
9. John H. O'Rouke, Brooklyn, N. Y.	32,900.00
10. P. J. Carlin & Co., Brooklyn, N. Y.	*24,865.00
11. John Kenedy & Sons, Brooklyn, N. Y.	25,545.00
12. Thomas Dwyer, New York, N. Y.	29,349.00
13. Robert J. Mills, New York, N. Y.	31,500.00
14. Thomas H. Stanley & Co., New York, N. Y.	32,900.00
15. Irvin A. Hodge, New York, N. Y.	37,124.70

*Accepted.

Offers for paving east dry dock pier, League Island, Pa., and approaches under advertisement March 11, 1895:

B. F. Sweeton & Son	$10,
Barber & Ireland	10,
Justin McCarthy	18,
William A. Mundy	11,
The Mack Paving Company	10,
Patrecius McMannus	*9,
Irving A. Dodge	14,
Gustavus A. Geiger	10,
Joseph V. Toner	11,
Owen Patterson	12,
George W. Ruch	13,
Vulcanite Paving Company	10,
William H. Edwards	13,
Fletcher & Co	13,
Michael O'Rourke	10,
Thomas Cunningham	10,
The Northern Paving Company	10,
Thomas C. Cooper	11,

Offers for installing suction pipe at navy-yard, League Island, under advertisement dated March 20, 1895:

William A. Mundy	*4,

Offers for completing Timber Dry Dock No. 3, at navy-yard, Brooklyn, N. Y., under advertisement dated April 12, 1895 (contract of John Gilles for constructing said dry dock having been declared forfeited by the Secretary of the Navy on April 12, 1895):

John B. Westbrook	409,
Colin McLean	377,
Thomas & Augustin Walsh	*370.
Simpson Dry Dock Company	464,

Offers received under advertisement dated June 12, 1895, for dredging at New York Navy-Yard—222,000 cubic yards:

Wm. H. Beard Dredging Company—
25 cents per cubic yard.
R. G. & J. S. Packard—*
24½ cents per cubic yard.

Offers received under advertisement dated June 18, 1895, for wharf and crib at naval station, Port Royal, S. C.:

Colin McK. Grant	17,
Gude & Walker	18,
D. F. Kramer	*15,

Offers for construction of office building and officers' quarters at Puget Sound naval station, Port Orchard, Wash., under advertisement dated June 17, 1895:

J. C. Redward	35,
A. S. Whiteway (informal)	36,
Atwood & Young	37,
Zindorf Construction Company	32,
C. J. Erickson	33,

Offers for dredging approach to channel at United States naval station, Port Orchard, Wash., under advertisement dated June 17, 1895:

Bowers Dredging Company—
50 cents per cubic yard.
New York Dredging Company—
28¾ cents for the entire work, per paragraph 1.
38 cents per cubic yard, per paragraph 12 of specifications.
6¾ cents for additional amount over paragraph 12.

Offers for artesian well and pumping plant at Puget Sound naval station, Port Orchard, Wash., under advertisement dated June 17, 1895:

Joslyn & Gibson—
For pumping plant.....
For well, 100 feet.....
For well, 200 feet.....
For well, 300 feet.....
and $5.50 for every additional foot to 500 feet, and over 500 feet add for each 100 feet 10 per cent of the price of previous 100 feet.

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* Accepted.

Offers for scow with pile-driving engine and boiler for navy-yard, League Island, Pa., under advertisement dated June 27, 1895:

John Baizley	$3,280.00
Eugene H. Cathrall	*1,925.00
Alfred Box & Co	5,300.00
S. C. Forsaith Machine Company	3,595.00
The Kensington Engine Works (Limited)	3,085.00

Offers for construction and continuation of sea wall, navy-yard, League Island, Pa., under advertisement dated June 27, 1895:

Wm. A. Mundy	*14,774.00
I. H. Hathaway & Co	17,000.00
Joe. S. Allen	15,589.00

Offers for dredging and removal of old crib at navy-yard, League Island, Pa., under advertisement dated June 27, 1895:

The American Dredging Company	11,800.00
Frank C. Somers	*10,875.00

Offers for construction of concrete sidewalks at navy-yard, League Island, Pa., under advertisement dated June 27, 1895:

The Vulcanite Paving Company—
- 15 cents per linear foot, coping.
- 21 cents per square foot, sidewalk.

The American Concrete Construction Company*—
- 8½ cents per linear foot, coping.
- 15¾ cents per square foot, sidewalk.

Warner H. Jenkins Company—
- 15 cents per linear foot, coping.
- 18 cents per square foot, sidewalk.

Wm. A. Mundy—
- 15 cents per linear foot, coping.
- $17\frac{9}{10}$ cents per square foot, sidewalk.

Delaplaine & West—
- 19 cents per linear foot, coping.
- 21 cents per square foot, sidewalk.

Carter's Artificial Stone Company—
- 18 cents per linear foot, coping.
- 24 cents, per square foot, sidewalk.

* Accepted.

Estimates of appropriations required for the service of the fiscal year ending June 30, . by the Bureau of Yards and Docks, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amou appropr for th current year en June 30,
SALARIES.			
One chief clerk, at $1,800 per annum (act Mar. 2, 1895)	$1,800.00		
One draftsman and clerk, at $1,800 per annum (same act)	1,800.00		
Two clerks of class three, at $1,600 per annum each (same act)	3,200.00		
One clerk of class two, at $1,400 per annum (same act)	1,400.00		
One clerk, at $1,000 per annum, (same act)	1,000.00		
One assistant messenger, at $720 per annum (same act)	720.00		
One laborer, at $660 per annum (same act)	660.00		
		$10,580.00	$10,
NOTE.—The Chief of the Bureau of Yards and Docks reports, under the requirements of section 2, act of July 11, 1890 (26 Stat., 267), that all of the clerks attached to the Bureau are above a fair standard of efficiency.			
MAINTENANCE, YARDS AND DOCKS, 1897.			
For general maintenance of yards and docks, namely: For freight; transportation of materials and stores; books, maps, models, and drawings; purchase and repair of fire engines; machinery; repairs on steam fire engines and attendance on the same; purchase and maintenance of oxen, horses, and driving teams; carts, timber wheels, and all vehicles for use in the navy-yards; tools and repairs of the same; postage on letters and other mailable matter on public service sent to foreign countries and telegrams; stationery; furniture for Government houses and offices in navy-yards; coal and other fuel, candles, oil, and gas; cleaning and clearing up yards and care of buildings; attendance on fires lights, fire engines, and apparatus; for incidental labor at navy-yards; water tax, tolls, and ferriage; rent of four officers' quarters at Philadelphia, Pa.; pay of watchmen in navy-yards; awnings and packing boxes, and advertising for yards and docks and other purposes ($15,000 submitted), (act Mar. 2, 1895)	265,000.00	265,000.00	250,
CONTINGENT, YARDS AND DOCKS, 1897.			
For contingent expenses that may arise at navy-yards and stations (act Mar. 2, 1895)	15,000.00	15,000.00	15,
REPAIRS AND PRESERVATION, NAVY-YARDS, 1897.			
For repairs and preservation at navy-yards and stations (act Mar. 2, 1895)	400,000.00	400,000.00	400,
NAVAL HOME, PHILADELPHIA, PA., 1897.			
One superintendent (act Mar. 2, 1895)	600.00		
One steward (same act)	480.00		
One matron (same act)	360.00		
One chief cook (same act)	360.00		
One assistant cook (same act)	240.00		
One assistant cook (same act)	180.00		
One chief laundress (same act)	192.00		
Five laundresses, each at $168 (increase of one submitted; same act)	840.00		
Five scrubbers, each at $168 (same act)	672.00		
One head waitress, at $192 (submitted; same act)	192.00		
Nine waiters, each at $168 (increase of one submitted; same act)	1,512.00		
Eight laborers, each at $240 (same act)	1,920.00		
One master-at-arms (same act)	480.00		
Two house corporals, each at $300 (same act)	600.00		
One engineer to run elevator (same act)	600.00		
One stable keeper and driver (same act)	360.00		
One barber (same act)	360.00		
One painter (same act)	600.00		
One carpenter (same act)	845.00		
		11,393.00	10,8
For water rent and gas (same act)	2,400.00		
For cemetery, burial expenses, and headstones (same act)	350.00		
For improvement of grounds (increase of $200 submitted; same act)	700.00		

Estimates of appropriations required for the service of the fiscal year, etc.—Continued

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
NAVAL HOME, PHILADELPHIA, PA., 1897—continued.			
For repairs to buildings, furnaces, grates, ranges, furniture and repairs of furniture (same act)	$7,000.00		
For music in chapel (same act)	600.00		
For transportation of indigent and destitute beneficiaries to the Naval Home (same act)	500.00	$11,550.00	$11,350.00
For support of beneficiaries (same act)	56,900.00	56,950.00	57,100.00
		79,893.00	79,315.00
CIVIL ESTABLISHMENT, YARDS AND DOCKS, 1897.			
Navy-yard, Portsmouth, N. H.:			
One clerk, at $1,400 per annum (act Mar. 2, 1895)	1,400.00		
One mail messenger, at $2 per diem* (same act)	730.00		
One messenger, at $600 per annum (same act)	600.00		
One foreman laborer and head teamster, at $4 per diem* (same act)	1,460.00		
One pilot, at $3 per diem* (same act)	1,095.00		
One janitor, at $600 per annum (same act)	600.00	5,885.00	7,307.00
Navy-yard, Boston, Mass.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One foreman laborer, at $4 per diem (same act)	1,252.00		
One messenger to commandant, at $1.76 per diem (same act)	550.88		
One messenger, at $1.76 per diem (same act)	550.88		
One mail messenger, at $2 per diem* (same act)	730.00		
One writer, at $900 per annum (same act)	900.00		
One master of tug, at $1,200 per annum (submitted)	1,200.00	6,583.76	5,393.28
Navy-yard, Brooklyn, N. Y.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One writer, at $1,017.25 per annum (same act)	1,017.25		
Two masters of tugs, at $1,500 per annum each (same act)	3,000.00		
Two writers, at $900 per annum each (same act)	1,800.00		
One foreman laborer, at $4.50 per diem (same act)	1,408.50		
One mail messenger, at $2 per diem* (same act)	730.00		
Two messengers, at $2.25 per diem each (same act)	1,408.50		
One draftsman, at $5 per diem (same act)	1,565.00		
One quarterman, at $3 per diem (same act)	939.00		
One superintendent of teams or quarterman, at $4 per diem (same act)	1,252.00		
One messenger to commandant, at $2.25 per diem* (same act)	821.25		
One electrician, at $1,200 per annum (same act)	1,200.00	16,541.50	16,566.75
Naval Station, Sacketts Harbor, N. Y.:			
One ship keeper, at $1 per diem* (same act)	365.00	365.00	366.00
Navy-yard, League Island, Pa.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One writer and telegraph operator, at $1,000 per annum (same act)	1,000.00		
One messenger, at $2 per diem (same act)	626.00		
One foreman laborer, at $4 per diem (same act)	1,252.00	4,278.00	4,284.00
Navy-yard, Washington, D. C.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One messenger, at $2 per diem (same act)	626.00		
One foreman laborer, at $4 per diem (same act)	1,252.00		
One electrician, at $1,200 per annum (increase of $200 submitted) (same act)	1,200.00	4,478.00	4,284.00
Navy-yard, Norfolk, Va.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One writer, at $1,017.25 per annum (same act)	1,017.25		
One writer, at $1,000 per annum (same act)	1,000.00		
One fireman laborer, at $4 per diem (same act)	1,252.00		
One mail messenger, at $2 per diem* (same act)	730.00		
Two messengers, at $2 each per diem (same act)	1,252.00		
One pilot, at $2.26 per diem (same act)	707.38		
One electrician, at $1,200 per annum (same act)	1,200.00	8,558.63	8,570.89

* Including Sundays.

Estimates of appropriations required for the service of the fiscal year, etc.—Continue

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amour appropri for the current fi year end June 30, 1
CIVIL ESTABLISHMENTS, YARDS AND DOCKS, 1897—cont'd.			
Navy-yard, Pensacola, Fla.:			
One clerk, at $1,200 per annum (same act)	$1,200.00		
One mail messenger, at $2 per diem* (same act)	730.00		
		$1,930.00	$1,93
Naval station, Key West, Fla.:			
One mail messenger, at $600 per annum (same act)	600.00		
		600.00	60
Navy-yard, Mare Island, Cal.:			
One clerk, at $1,400 per annum (same act)	1,400.00		
One writer, at $1,017.25 per annum (same act)	1,017.25		
One fireman mason, at $6 per diem (same act)	1,878.00		
One fireman laborer, at $5.50 per diem (same act)	1,721.50		
One pilot, at $4.80 per diem (same act)	1,502.40		
One draftsman, at $5 per diem (same act)	1,565.00		
One mail messenger, at $2 per diem* (same act)	730.00		
One messenger, at $2 per diem (same act)	626.00		
One electrician, at $1,200 per annum (same act)	1,200.00		
One messenger and lamplighter, $2 per diem (same act)	626.00		
		12,266.15	12,29
		61,486.04	61,59
NAVY-YARDS AND STATIONS.			
Navy-yard, Boston, Mass.:			
For cart shed (alteration of building No. 56) (submitted; act Mar. 2, 1895)	4,500.00		
For 2 electric-light plant boilers (same act)	4,500.00		
		9,000.00	1,50
Navy-yard, Brooklyn, N. Y.:			
For wing and quay walls of Dry Dock No. 3 (submitted; same act)†	60,000.00		
For grading and paving sidewalks, etc; total cost, $122,931 (submitted; same act)	10,000.00		
For quay wall coal dock, 800 feet; total cost, $116,347 (submitted; same act)	40,000.00		
For extension of railroad system; total cost, $27,293 (submitted; same act)	10,000.00		
For extending copper and black smith shop No. 28 (submitted; same act)	10,000.00		
For quay wall Whitney Basin, 1,250 feet; total cost, $104,365.25 (submitted; same act)	25,000.00		
For completing the reconstruction of buildings Nos. 114, 115, and 116 (submitted; same act)	40,000.00		
For completing Dry Dock No. 3 (submitted; same act)†	50,000.00		
		245,000.00	151,39
Navy-yard, League Island, Pa.:			
For dredging and filling in (submitted; same act)	30,000.00		
For water-closets for yard (submitted; same act)	5,580.00		
For lightning rods (submitted; same act)	2,000.00		
		37,580.00	44,50
Navy-yard, Washington, D. C.:			
For roof trusses and roof for entire quadrangle building (submitted; same act)	59,411.77		
For alterations of north end of west side quadrangle building (submitted; same act)†	15,657.44		
For building sentry boxes at east gate and south end (submitted; same act)	1,000.00		
For building for paint shop and inflammable material (submitted; same act)	5,000.00		
		81,069.21	51,87
Navy-yard, Norfolk, Va.:			
For store shed between dry docks (submitted; same act)	18,750.00		
For extension of quay wall, continuation of (submitted; same act)	15,000.00		
For standpipe and foundations for water system (submitted; same act)	13,000.00		
For boiler for electric plant, including shed and connections (submitted; same act)	9,000.00		
For quay wall, north end of timber basin; total cost, $91,760 (submitted; same act)	20,000.00		
		75,750.00	46,01

* Including Sundays. † To be made immediately available.

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
NAVY-YARDS AND STATIONS—continued.			
Naval station, Port Royal, S. C.:			
For chemical fire engine (submitted; same act)	$650.00		
For lightning conductors (submitted; same act)	532.00		
For artesian well (submitted; same act)	15,000.00		
For purchase of dredge and dredging channel opposite station (submitted; same act)	300,000.00		
For condensing plant (submitted; same act)	3,000.00		
For steel tower and tank (submitted; same act)	4,000.00		
For storehouse (submitted; same act)	10,000.00	$333,182.00	$77,915.00
Naval station, Key West, Fla.:			
For sea wall (submitted; same act)	3,400.00		
For dredging (submitted; same act)	3,000.00	6,400.00	60,000.00
Mare Island Navy-yard, Cal.:			
For extension of quay wall (submitted; same act)	30,000.00		
For free bridge between Vallejo and the yard (submitted; same act)	205,060.00		
For guard chains about stone dry dock (submitted; same act)	1,470.57		
For grading and paving (submitted; same act)	10,000.00		
For removing board sidewalks and extending roads (submitted; same act)	15,685.00		
For ship-fitters' shed (submitted; same act)	30,000.00		
For storage shed for construction and repair (submitted; same act)	10,139.00	302,354.57	110,874.00
Puget Sound naval station, Wash.:			
For machine and repair shops at dry dock (submitted; same act)	60,000.00		
For storehouse	20,000.00		
For two steel tanks	11,980.00		
For water main	3,625.00		
For cleaning station (protection against fire)	9,250.00	104,855.00	200,000.00
Naval station, Algiers, La.:			
For new dry dock (total cost, $1,250,000) (submitted; same act)	100,000.00	100,000.00	
		1,295,190.78	804,075.00

[a] Including Sundays.

REPORT

OF

THE CHIEF OF BUREAU OF EQUIPMENT.

NAVY DEPARTMENT, BUREAU OF EQUIPMENT,
Washington, D. C., October 1, 1895.

SIR: I have the honor to submit the report of this Bureau for the fiscal year ending June 30, 1895, with the estimates for the fiscal year ending June 30, 1897.

The report includes the business operations of the Bureau, the reports of the Superintendent of the Naval Observatory, of the Director of the Nautical Almanac, of the Inspector of Electric Lighting, and of the Superintendent of Compasses.

The following were the appropriations for the Bureau and its branches:

Equipment of vessels	$1,090,000
Contingent equipment	12,000
Civil establishment	19,025
Naval Observatory	38,656
Nautical Almanac	8,400

By reason of the low price at which coal has been purchased and of economy in other expenditures, it is thought that about $25,000 will be turned back into the Treasury from the appropriation "Equipment of vessels."

The sum of $338,398.74 was expended for labor at the several navy-yards in equipping ships of the Navy.

There was expended abroad for equipment supplies the sum of $391,921.72. Of this amount $336,183.47 was expended for 47,985 tons of coal, an average cost per ton of $7.

The following was manufactured at the Boston Navy-Yard at a cost for material of $60,442.33; for labor, $73,799.65:

	Pounds.
In the ropewalk:	
Manila rope	300,160
Hemp rope	38,397
Wire rope	41,000
Bolt rope	30,470
Seizing	7,498
Spun yarn	6,725
Marline, codline, ratline, houseline, etc	42,279
In the rolling mill:	
Iron rolled	507,986
In the machine shop and foundry:	
Chain studs	57,020
Miscellaneous castings	31,222
Galley parts, etc	4,882

In the forge, anchor, and chain shop:	Pounds.
Anchors manufactured and altered	97,937
Chain cables of various sizes and appendages	237,748
Cat and ground chains, shackles, grapnels, and buoys	20,947
Collision mat chains, coaling-bag slings	10,355

There was expended in the sail lofts of the several navy-yards the sum of $51,224.31 for labor and $39,734.69 for material, and in the rigging lofts $29,307.46 for labor and $17,935.86 for material.

Hemp for the manufacture of cordage of all kinds, to the amount of $55,313.25 was purchased during the year, as follows:

	Tons.	Cost.
American hemp	30,[illegible]	$5,866.18
Manila hemp	290[illegible]	49,447.07
Total	320[illegible]	55,313.25

The following material was on hand at the Boston Navy-Yard at the close of the year for the manufacture of rope:

	Pounds.
American hemp	92,254
Manila hemp	80,453
Russia hemp	124,605
Wire	135,441
Hide (cut yarns)	2,211

Much difficulty has been experienced in obtaining satisfactory iron for chain cables, but it is hoped this question is now solved.

98,615 tons of coal were purchased last year, as against 94,336 tons of the preceding year. 47,985 tons were purchased abroad in 1895, as against 52,146 tons in 1894, at a decreased cost per ton in 1895 of $1.43. The average cost of all coal in 1895 was $5.35, as against $6.78 in 1894. Had we paid as much in 1895 as in the year preceding there would have been a deficit of $116,000. A large saving was made on the cost of coal supplied in the West Indies by sending a supply there from the United States. Coal is being supplied there now by dealers on comparatively satisfactory terms.

There were purchased at home 50,630 tons of coal, costing $181,985.89, of which quantity 44,746 tons were purchased on the Atlantic Coast at an average cost of $3.22 per ton, and 5,884 tons on the Pacific Coast at an average cost of $6.79 per ton.

Of a total of 83,039 tons of coal used by the new ships of the Navy 44,348 tons, or 53.4 per cent, was for steaming purposes, and 38,691, or 46.6 per cent, was for auxiliary purposes, under which latter head are included electric lighting, distilling, heating, flushing water-closets, cooking, ventilation, and steam-cutter service. This percentage is much higher than that of last year, viz, 29 per cent.

The following list gives the expenditures for steaming and for auxiliary purposes for each ship:

	Moving ship.	Distilling.	Pumps.	Lighting.	Heating.	Galley.	Steamboats.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Adams	367	32	.....	42	28	14	7
Alliance	121	15	2	.....	35	28	4
Amphitrite	255	53	157	44	.....	9	1
Atlanta	1,927	229	727	648	81	46	16
Alert	736	128	3	.....	111	47	29
Bancroft	144	.....	.....	.....	265	.....	.....
Baltimore	1,703	2,403 tons used for all auxiliary purposes. Details not complete.					
Bennington	1,328	180	60	626	68	50	44
Castine	509	1,079 tons used for all auxiliary purposes. Details not complete.					
Charleston	2,541	303	46	521	166	94	62
Chicago	1,719	363	681	666	30	156	108
Cincinnati	2,007	413	652	554	206	120	24
Columbia	4,815	1,094	806	1,614	280	129	54
Concord	1,563	822 tons used for all auxiliary purposes. Details not complete.					
Cushing	137	2	1	14	17	17	.....
Detroit	1,600	208	128	577	66	42	10
Dolphin	745	97	55	168	499	52	13
Essex	333	134	.....	.....	24	57	21
Fern	374	.....	4	.....	164	16	.....
Machias	935	81	89	342	30	24	23
Marblehead	1,866	199	61	427	99	36	69
Miantonomoh	354	7	28	516	16	16	16
Michigan	91	.....	.....	.....	96	40	59
Minneapolis	1,916	440	558	556	174	84	14
Mohican	625	137	.....	.....	172	67	43
Monocacy	331	97	.....	.....	174	56	8
Monterey	1,283	1,628 tons used for all auxiliary purposes. Details not complete.					
Montgomery	1,856	153	623	458	64	53	3
New York	4,014	521	662	1,576	210	87	48
Newark	1,427	468	454	575	136	173	75
Olympia	487	200	144	324	44	52	67
Petrel	643	121	17	328	132	48	1
Philadelphia	1,539	405	155	604	643	101	55
Pinta	129	24	.....	.....	179	56	.....
Raleigh	2,448	129	368	520	357	83	30
Ranger	866	138	.....	.....	46	84	28
San Francisco	2,242	189	47	672	131	204	30
Thetis	527	69	34	.....	2	46	58
Vesuvius	260	16	7	133	129	25	.....
Yantic	150	69	.....	.....	70	44	29
Yorktown	2,086	1,457 tons used for all auxiliary purposes. Details not complete.					

The Bureau during the year has reorganized the library system, the whole being based upon the best library practice of the country, which was closely studied. The Bureau has a high appreciation of the importance of this subject, and has made earnest endeavors to bring it to a high standard. The Bureau deemed it a first necessity of the subject to endeavor to cover the many sciences and arts with which the service is intimately connected, in order that officers may be given an opportunity to keep pace with their profession. While doing this it has endeavored not to lose sight of subjects of general interest, offering as wide a field as possible to the studious minds of the service.

Much time has been devoted to the subject of instruments for navigational purposes. The specifications have been perfected, and the steps taken to make a scientific inspection of instruments offered place us on an equality with the best foreign practice in this regard.

The supply of mess utensils, tableware, and table linen to the officers' messes is a very satisfactory step in a military point of view, while adding to the comfort and contentment of the service. The supply of the mess outfits to the crews has been authorized, and the Bureau is at present engaged in arranging the details and in settling upon the character of the outfit.

Much valuable information regarding the character of the coals used by the ships of the service has been obtained and will be kept up, this

being necessary because of the change in the character of the coals from time to time sold under a particular trade name, which may cover the product of many mines.

Endeavors have been constant to mend the equipment of ships by discarding insufficient or antiquated articles and specifying for the best that can be secured. These specifications, it is expected, will make more even the purchases at the different stations, where heretofore outfits have depended much upon what was to be had in local markets, producing great variations in character and value of material supplied.

The Superintendent of the Naval Observatory reports as follows:

UNITED STATES NAVAL OBSERVATORY,
GEORGETOWN HEIGHTS,
Washington, D. C., September 26, 1895.

SIR: I have the honor to submit herewith the annual report of the operations of the United States Naval Observatory for the fiscal year ending June 30, 1895.

By the "Regulations of the United States Naval Observatory," issued by the Navy Department September 20, 1894, the observatory work is divided into two branches—astronomical and nautical.

The astronomical branch includes the department of astronomical observations and the department of the Nautical Almanac.

The nautical branch includes the department of nautical instruments, the department of chronometers and time service, and the department of magnetism and meteorology.

The Astronomical Director reports as follows:

SIR: In compliance with paragraph 23 of the regulations for the government of the United States Naval Observatory, I have the honor to submit the following report concerning the operations of the astronomical department for the fiscal year ending June 30, 1895.

THE 26-INCH EQUATORIAL.

[Prof. STIMSON J. BROWN, U. S. N., in charge.]

Observations of Mars were begun on September 24, 1894, and continued until November 22, 1894, and during that period every clear night was utilized in observing the satellites and making examinations for surface markings on the planet. On the nights of October 15, 18, 19, and 24, the seeing was unusually fine. On the 19th Phobos was followed within the bluish glare of the secondary spectrum surrounding Mars, almost up to the limb of the planet, and on all these nights special efforts were made during the most favorable moments to detect some of the finer markings which have been observed by others. Powers up to 900 were used, but the best results were attained with 400 and 600. A few drawings of the planet were made, but they are noticeably lacking in the numerous canals which have been sketched with much smaller telescopes. Observations of the position angles and distances of the satellites were undertaken whenever possible, 30 being obtained on Deimos and 15 on Phobos. About the middle of November the efficiency of the telescope was somewhat impaired by moisture which collected between the two lenses composing the objective, and that, together with the increasing distance of the planet, rendered it impossible to observe the satellites after November 22. A discussion of the orbits of these satellites, based upon nearly all available material, is in *progress.*

Observations of the satellites of Saturn were made from March 22 to June 18, 1895, for the purpose of accumulating data to determine the masses of the planet and ring. Except in the case of Hyperion, the observations were made by measuring the relative positions of pairs of satellites, and the number of results obtained was as follows: Iapetus-Titan, 28; Iapetus-Rhea, 23; Titan-Rhea, 6; Dione-Tethys, 25; Dione-Enceladus, 4; Hyperion, 6.

Observations of the satellite of Neptune were made from December 5, 1894, to March 21, 1895, when the unusually cold weather froze the water pipes which work the elevating platform and rendered the telescope temporarily unserviceable. Owing to the prevalance of clouds, only 14 observations were obtained.

Observations of the transit of Mercury were made on November 10, 1894; and five observations of Swift's comet, 1894, *e*, were made between December 14 and 27, 1894.

The instrument is in good order, and seems to maintain its adjustments very steadily. On account of an accumulation of moisture between its interior surfaces, the objective was removed from its cell on December 7, 1894, and the lenses were cleaned. On May 17, 1895, there was received for this telescope a much-needed set of 9 Airy-Huygenian eyepieces, and 1 Herschel solar prism, together with the necessary sun shades and adapters, all made by Mr. M. E. Kahler, and packed in a neat mahogany box. In accordance with my instructions, the equivalent focal distances of these eyepieces ranged from 0.25 inch to 4 inches, the whole forming a geometrical series whose common ratio is the square root of 2.

THE 12-INCH EQUATORIAL.

[Prof. EDGAR FRISBY, U. S. N., in charge.]

The 12-inch object glass for this instrument has not yet been completed by the contractor, and consequently the old 9.6-inch objective, which was temporarily fitted to the 12-inch mounting, is still in use. The work accomplished with it during the year was as follows: 64 observations of asteroids; 2 observations of Gale's comet; 10 observations of Encke's comet; observations of the transit of Mercury on November 10, 1894; 10 observations of occultations of stars by the moon; 6 observations of eclipses of Jupiter's satellites; and a few observations of the magnitudes and positions of variable stars.

The instrument was also used on two evenings of each week, weather permitting, for the exhibition of celestial objects to visitors. During the year 3,402 permits were issued to such visitors by the Observatory, and a large additional number were issued by the Bureau of Equipment.

Prior to May 17, 1895, this instrument had been very insufficiently supplied with eyepieces, but on that date a new set was furnished by Mr. M. E. Kahler, of this city, in accordance with specifications drawn up by me. It consists of 9 Airy-Huygenian eyepieces having equivalent foci ranging from 0.25 inch to 4 inches; 6 Kellner eyepieces (4 new and 2 old) with equivalent foci ranging from 0.25 inch to 1.414 inches; 1 Herschel solar prism, and all necessary adapters and sun shades; the whole packed in a neat mahogany case. The equivalent focal distances, both of the Airy-Huygenian and of the Kellner eyepieces, form geometrical series whose common ratio is the square root of 2.

THE 9-INCH TRANSIT CIRCLE.

[Assistant Astronomer A. N. SKINNER in charge.]

When I became Astronomical Director I found Mr. Skinner in charge of this instrument, with Computers F. B. Littell and Theo I. King as assistants, and this very small force had been engaged since January 13, 1894, in observing the zone of stars situated between 13° 50′ and 18° 10′ of south declination for the German Astronomical Society's great international catalogue. The Observatory had undertaken to do that work so long ago as 1889, and as various causes had operated to defer its beginning until 1894, I was confronted with the problem of devising means for taking up systematic observations of the Sun, Moon, and planets, and at the same time continuing the zone work. Even under the most favorable conditions, these two classes of work would have interfered seriously with each other, but the situation was further complicated by the small number of observers at my disposal, and the best I could do was to continue Messrs. Skinner, Littell, and King upon the zone work, and to assign Assistant Astronomer H. M. Paul to the instrument for the purpose of obtaining as many observations of the Sun, Moon, and planets as he could without interrupting the zone work too seriously. Computer E. A. Boeger has also been allowed to spend most of his time in assisting Mr. Skinner.

The observations made between June 30, 1894, and June 30, 1895, are as follows: Zone stars, 8,340; zero stars, 672; American Ephemeris stars, 529; miscellaneous stars, 215; Sun, 39; Moon, 17; Mercury, 29; Venus, 25; Mars, 14; asteroids, 8; Jupiter, 5; Saturn, 6; Uranus, 8; Neptune, 1. Total, 9,908.

Respecting the zone observations, it is to be remarked that all the work at the eye end of the telescope was done by Mr. Skinner, while the pointing of the telescope, the reading of the two circle microscopes, and the recording was done either by Mr. Littell or by Mr. King, these two gentlemen acting on alternate nights. On October 5, 1894, Mr. Paul was assigned to the work of observing the Sun, Moon, and planets, but the number of observations obtained is small because there was so little clear weather that almost the whole of it was necessarily occupied by the zone work.

The webs composing the reticle in the eye end of the instrument have given much trouble by becoming so slack during damp weather that most of them had to be replaced by new ones, and many observations were lost on account of the delays thus arising.

The chronograph sheets have been read off and the transits have been reduced to the mean wire through July 15, 1895. The means of the circle microscopes have been taken and the micrometer equivalents, horizontal-wire intervals, and inclinations of wires have been applied through June 1, 1895. For the reduction of the zones the tables for refraction have been computed through zone 41 and the tables for reduction to mean place through zone 17.

In the course of the zone observations Mr. Skinner discovered two new variable stars, namely:

X Hydræ = B. D.−14°2893, $9^h\ 28^m\ 34.9^s$, −14° 02.8′ (1855).
W Ceti = B. D.−15°6531, $23^h\ 54^m\ 41.7^s$, −15° 29.5′ (1855).

These stars have also been observed by Mr. Paul, and he has determined the period of the first to be 296 days.

During the year it has been necessary to employ some rather crude devices in connection with the transit circle, partly on account of circumstances peculiar to the zone work and partly because of imperfec-

tions in the new mounting of the instrument and its collimators, but every effort is being made to remedy these difficulties as rapidly as possible.

THE PRIME VERTICAL TRANSIT INSTRUMENT.

[Assistant Astronomer GEORGE A. HILL in charge.]

This instrument is used exclusively for investigating variations of latitude and determining the constants of aberration and nutation. As the aperture of the telescope is sufficient to show α Lyræ in the daytime, the plan is to observe that star for variation of latitude at every possible culmination throughout the year, and to observe μ Andromedæ, α Canum Venaticorum, θ Aurigæ, and γ Bootis near the times of their maximum aberration, in order to disentangle the latter constant from the latitude variation.

The number of observations obtained during the year ending June 30, 1895, is as follows: μ Andromedæ, 30; α Canum Venaticorum, 40; θ Aurigæ, 41; α Lyræ, 126; γ Bootis, 10. Total, 247.

The webs composing the reticle in the eye end of this instrument, like those in the transit circle, have given much trouble by becoming slack and crooked in damp weather. Three separate times they have had to be renewed, and the delays thus arising have materially diminished the number of observations which would otherwise have been obtained on α Lyræ and α Canum Venaticorum.

Last November the meridian instrument Stackpole & Brother No. 1502, which is used in connection with the 40-foot photoheliograph, was mounted for the purpose of observing the transit of Mercury, and advantage was taken of that circumstance to place Mr. Hill in charge of it. It has a focal length of 30 inches, with a clear aperture of 2.55 inches, and is arranged to be used either as a transit instrument or as a zenith telescope. The magnifying power habitually employed is 61 diameters, and the micrometer has sufficient range to permit the observation of α Lyræ by Talcott's method, both as a north and as a south star. The method of procedure is to observe α Lyræ on the eastern vertical with the prime vertical transit; then on the meridian with Stackpole & Brother No. 1502, used as a zenith telescope; and finally on the western vertical with the prime vertical transit. In that way the declination of the star is determined at every observable culmination, both by the prime vertical instrument and by the zenith telescope, and thus a very complete check is obtained on the work of both instruments. Notwithstanding the small size of No. 1502, no difficulty has been experienced in observing the star in the brightest sunshine, and since November 22, 1894, a total of 93 observations have been obtained.

In justice to the observer it should be stated that the work with these two instruments is very confining, the stars coming in such a way that he has to be at the observatory for an average of about twelve hours per day.

THE TRANSIT OF MERCURY, NOVEMBER 10, 1894.

The first and second contacts of Mercury with the Sun on November 10, 1894, were observed telescopically by Prof. S. Newcomb, U. S. N., Prof. J. R. Eastman, U. S. N., Prof. Edgar Frisby, U. S. N., Prof. S. J. Brown, U. S. N., Assistant Astronomer George A. Hill, and myself; but the third and fourth contacts were unfortunately lost in clouds.

The 40-foot photoheliograph was used throughout the transit by Photographer Charles T. Fellows, Computers William M. Brown and E.

A. Boeger, and Messrs. F. H. Parsons and F. J. Cullen, under my own immediate direction, and 131 photographs of Mercury on the Sun's disk were made, of which 129 proved excellent. These have since been completely measured by Mr. Fellows, but the measures are not yet reduced.

THE TRANSIT CIRCLE STAR CATALOGUE.

[Prof. JOHN R. EASTMAN, U. S. N., in charge.]

This catalogue will contain the mean places for 1875.0 of about 6,000 stars, based upon all the stellar observations made with the 8.5-inch Pistor & Martins transit circle while it was used at the old Naval Observatory, namely, from January 3, 1866, to June 29, 1891. In the preparation of these star places Professor Eastman has been assisted since October 12, 1894, by Mr. F. H. Parsons, temporarily employed as a computer, and since December 10, 1894, by Computer William M. Brown. The work done during the year has related principally to the computation and application of the precessions necessary for reducing the observations to the epoch 1875.0, but incidentally numerous errors in the original reductions of the individual observations have been discovered and corrected. The means of the results of observations of miscellaneous stars have not yet been taken.

Very respectfully, etc.,

WM. HARKNESS,
Professor of Mathematics, United States Navy,
Astronomical Director.

The Director of the Nautical Almanac reports as follows:

SIR: In compliance with the order of the Department of July 10 last, I have the honor to submit the following report of the work of this office for the past year:

PRINTING.

The American Nautical Almanac for 1899 and the American Ephemeris for 1898 are now in press, but copies have not yet been received. The Pacific Coaster's Almanac for 1896 is also in press. Of the Ephemeris and Nautical Almanac for 1899 104 pages are now in type.

The printing has fallen slightly in arrears, owing to the employment, with the consent of this office, of some of the printing force regularly devoted to the Ephemeris in the printing of the new tables of the planets. The introduction of the new tables, constants, and other data in the Ephemeris for 1900 involves a large amount of extra labor on the part of the regular computers, which may result in some delay in sending copy of that volume to the printer.

DISTRIBUTION.

During the fiscal year ending June 30, 1895, the sale and distribution of publications have been as follows:

Title.	Sold.	Distributed.	Public service.	Total.
American Ephemeris	547	277	550	1,374
American Nautical Almanac	1,700	.....	210	1,910
Pacific Coaster's Almanac	1,125	.....	17	1,142
Astronomical papers	5	437	15	457

The proceeds of sales, amounting to $1,199.33, have, in compliance with law, been deposited in the Treasury to the account of the appropriation for public printing and binding.

NEW TABLES OF THE PLANETS.

Since my last annual report the discussion of the fundamental constants of astronomy, and of the elements of motion of the earth, Mercury, Venus, and Mars, has been completed and printed. The new tables of the Sun, Mercury, and Venus, based on these elements, have been brought to completion, and those of Mars nearly completed. The latter are awaiting a revision of the theory, and a new solution of the equations of condition, a work which may still require several months.

Besides the discussion of the elements and constants, the following astronomical papers were published during the last fiscal year: Volume V, Part III, Investigation of the action of the planets on the moon; Volume V, Part IV, Computation of the secular variations of the four inner planets; Volume VII, Part I, Tables of Jupiter.

The following are in press and their speedy issue is expected: Volume VI, Part I, Tables of the Sun; Volume VI, Part II, Tables of Mercury; Volume VII, Part II, Tables of Saturn.

The new tables of Venus, forming Volume VI, Part III, are now in the hands of the printer, and the composition and stereotyping are making rapid progress.

The construction of special tables of Uranus and Neptune has been postponed until the next fiscal year. This work will be easy compared with that bestowed on the other planets. When the tables are done and printed astronomers will for the first time have at hand tables of the eight major planets founded on uniform and consistent theories and data, the latter being derived from a discussion of all available observations at leading observatories of the world since 1750, as also those made on expeditions to observe the transits of Venus since 1761.

EPHEMERIS OF THE FIXED STARS.

As I have stated in previous annual reports, the most pressing need of the Ephemeris is an enlarged and improved list of those fixed stars which are used in the determination of longitudes on the earth and of the apparent positions of the heavenly bodies in the sky. For the convenience of the astronomy of the future it is desirable that a consistent list should be adopted by all the ephemerides of the world, and to avoid the necessity of frequent changes, which are always productive of confusion, it is also desirable that the list should be as accurate as possible. A desire for a uniform list, to be constructed by cooperation between the offices of different national ephemerides, has been expressed by the directors of all these publications; but no practical plan for attaining this end has yet been agreed upon. To agree upon one, a personal conference among the directors will probably be found necessary. Meanwhile work on a new list, which it is desired to introduce into the Ephemeris for 1900, has been commenced, but, owing to the absorption of the available force in the construction of the new tables of the planets, it has not made much progress.

In addition to the formation of the proposed list of mean places, nev tables for the reduction to apparent place are necessary. In th preparation of these the superintendent of the British Nautica Almanac has courteously cooperated by loaning to this office a ingenious instrument for the rapid reduction of stars to apparent place devised by Mr. Hudson, an assistant in his office. I have had th necessary tables printed for constructing several copies of thi instrument.

Very respectfully, your obedient servant,

SIMON NEWCOMB,
Professor of Mathematics, United States Navy,
Director Nautical Almanac.

DEPARTMENT OF NAUTICAL INSTRUMENTS.

[Commander JOSHUA BISHOP, U. S. N., in charge to September, 1894; Lieut. Commander WALTO GOODWIN, U. S. N., in charge October to January, 1895; Lieut. B. W. HODGES, U. S. N., in charg January 7 to June 30, 1895.]

The province of this department is to receive, inspect, and issue t the vessels of the Navy all instruments (chronometers and watche excepted) furnished for navigating and surveying purposes.

In order to put this important service upon a proper basis and t assure its systematic working whereby the best instruments can b obtained, detailed specifications have been prepared with great car for sextants, high-grade and surveying; octants; binocular glasses, da and night; quartermaster's spyglasses, high, medium, and low power officer-of-the-deck spyglasses; barometers, mercurial and aneroid clocks, deck and boat; three-arm protractors, and theodolites.

A complete outfit of the apparatus necessary to the thorough inspec tion of instruments has been provided for and will soon be installe for use.

Contractors have experienced some difficulty in fulfilling the requir ments of the specifications, but better progress in that direction is no being made, and by rigidly enforcing the specifications our ships ar being supplied with instruments of the above classes uniform in patter and excellent in quality.

DEPARTMENT OF CHRONOMETERS AND TIME SERVICE.

[Lieut. L. C. HEILNER, U. S. N., in charge. Lieut. F. W. KELLOGG, U. S. N., and Computer FRA E. DENNETT, assistants.]

The south transit instrument is used in this department for obtainin the corrections and rates of the mean time standard clock.

Observations were made for this purpose during the year wheneve practicable.

The annual trial of repaired chronometers commenced December 1 1894, and was finished May 15, 1895. Of the 25 chronometers tested 24 had trial numbers ranging from 3.7941 to 37.9332, showing excellen performance.

During the same period 13 chronometers, submitted for purchase, were entered for competitive trial. All were rejected, the best one having a trial number in excess of the maximum allowed.

The following are the results in detail of these trials:

Record of trial of repaired chronometers, 1894 and 1895.

Relative number.	Repaired by—	Number of chronometer.	Maker.	Dec. 19 to Dec. 26.	Dec. 27 to Jan. 3.	Jan. 4 to Jan. 11.	Jan. 12 to Jan. 19.	Jan. 20 to Jan. 27.	Jan. 28 to Feb. 4.
	Temperature, Fahrenheit			54.98°	70.00°	85.02°	89.96°	84.99°	69.99°
	Relative humidity, per cent			70	70.7	70	70.8	70	69.2
1	Negus	1605	T. S. & J. D. Negus	+0.717	+0.669	+1.133	+1.529	+1.140	+0.830
2	do	1777	do	—0.640	—0.617	—0.760	—0.400	—0.610	—0.527
3	do	285	Wm. Bond & Son	—0.783	—0.653	—0.224	+0.029	—0.253	—0.956
4	do	863	T. S. & J. D. Negus	+1.753	+1.383	+1.990	+2.636	+2.104	+1.187
5	do	1449 M. T. B. C.	do	+1.039	+0.704	+1.419	+1.814	+1.461	+0.794
6	do	1266	do	+1.431	+0.811	+1.133	+1.707	+1.211	+0.437
7	do	1229	do	+3.074	+2.597	+3.383	+3.743	+3.069	+2.223
8	Bliss	2829	John Bliss & Co	+0.539	—0.617	—0.331	—0.150	—0.324	—0.313
9	Negus	425	Wm. Bond & Son	—0.783	+0.061	+0.561	+0.743	+0.640	+0.151
10	do	510	do	+0.610	+0.561	+1.383	+1.779	+1.069	+0.080
11	do	1305	T. S. & J. D. Negus	+3.110	+2.776	+3.883	+4.564	+4.140	+3.294
12	do	1293	do	+0.646	—0.117	+0.276	+0.993	+0.640	+0.223
13	Bliss	2860	John Bliss & Co	—2.069	—2.561	—1.760	—1.293	—1.324	—1.741
14	Negus	997	T. S. & J. D. Negus	+2.039	+0.990	+1.383	+1.886	+1.640	+1.473
15	do	1345	do	+2.360	+1.311	+1.454	+1.957	+1.783	+1.723
16	do	1595	do	+2.324	+1.061	+1.633	+2.243	+1.747	+1.259
17	do	293	Wm. Bond & Son	—0.069	+0.007	+1.633	+2.671	+2.033	+0.616
18	do	1295 S.B.C.	T. S. &. J. D. Negus	+1.384	+0.263	+1.263	+2.156	+1.453	+0.493
19	do	1684 S.B.C.	do	+1.847	+0.226	+0.549	+1.156	+0.839	+0.637
20	do	775	do	—0.283	—1.117	—0.760	+0.279	—0.039	—0.563
21	do	1088	do	+1.967	+0.311	+0.061	+0.529	+0.461	+1.116
22	do	599	do	+0.396	—0.689	—1.260	—0.543	—0.181	—0.599
23	do	1097	do	+0.360	+0.347	+1.919	+2.957	+2.533	+1.330
24	do	1299	do	—0.961	—1.724	—0.510	+0.850	+0.390	—0.599
25	Bliss	504	Wm. Bond & Son	—0.926	—1.760	—2.510	—3.400	—2.789	—2.349

Relative number.	Repaired by—	Number of chronometer.	Maker.	Feb. 5 to Feb. 10.	Feb. 11 to Feb. 18.	Feb. 20 to Feb. 27.	Feb. 27 to Mar. 6.	Mar. 6 to Mar. 13.	Mar. 13 to Mar. 20.
	Temperature, Fahrenheit			55.00°	45.12°	63.91°	70.05°	78.26°	69.77°
	Relative humidity, per cent			67.4	72	52.4	52	51.2	61.1
1	Negus	1605	T. S. & J. D. Negus	+0.730	+0.551	+0.137	+0.224	+0.273	+0.119
2	do	1777	do	—0.770	—0.163	—0.827	—0.883	—0.799	—0.846
3	do	285	Wm. Bond & Son	—1.020	—0.770	—1.006	—1.204	—1.191	—1.096
4	do	863	T. S. & J. D. Negus	+1.630	+2.694	+1.459	+1.403	+1.487	+1.190
5	do	1449 M. T. B. C.	do	+1.480	+2.409	+0.816	+0.724	+1.094	+0.869
6	do	1266	do	+1.180	+2.444	+0.494	+0.260	+0.273	+0.190
7	do	1229	do	+2.830	+3.944	+2.244	+2.331	+2.380	+2.154
8	Bliss	2829	John Bliss & Co	—0.170	+1.301	—0.684	—0.919	—1.084	—1.203
9	Negus	425	Wm. Bond & Son	—0.470	—0.734	—0.220	—0.204	—0.049	—0.131
10	do	510	do	+0.280	+0.766	—0.399	—0.383	—0.549	—0.596
11	do	1305	T. S. & J. D. Negus	+3.480	+3.980	+2.887	+2.760	+2.880	+2.869
12	do	1293	do	+1.030	+2.444	+0.280	+0.153	+0.237	+0.404
13	Bliss	2860	John Bliss & Co	—1.620	—1.484	—2.149	—2.276	—2.191	—2.346
14	Negus	997	T. S. & J. D. Negus	+2.430	+3.587	+1.316	+1.153	+1.130	+1.261
15	do	1345	do	+2.880	+4.159	+1.709	+1.224	+1.094	+1.261
16	do	1595	do	+2.330	+3.980	+1.030	+0.760	+0.701	+0.726
17	do	293	Wm. Bond & Son	+0.180	+0.444	+0.351	+0.760	+0.987	+0.904
18	do	1295 S.B.C.	T. S. & J. D. Negus	+0.986	+2.534	+1.084	+0.884	+0.504	+0.921
19	do	1684 S.B.C.	do	+1.634	+3.033	+1.263	+0.920	+0.897	+0.814
20	do	775	do	+0.380	+1.766	—0.399	—0.597	—0.656	—0.703
21	do	1088	do	+2.580	+4.266	+1.673	+1.046	+0.844	+1.083
22	do	599	do	+0.680	+2.337	—1.506	—1.597	—1.084	—0.703
23	do	1097	do	+1.430	+1.837	+1.173	+1.117	+1.166	+1.119
24	do	1299	do	—0.220	+0.587	—1.006	—1.133	—1.191	—1.096
25	Bliss	504	Wm. Bond & Son	—2.020	—2.056	—1.684	—2.240	—2.120	—2.167

Record of trial of repaired chronometers, 1894 and 1895—Continued.

Relative number.	Repaired by—	Number of chronometer.	Maker.	Mar. 20 to Mar. 27.	Mar. 27 to Apr. 3.	Apr. 3 to Apr. 10.	Apr. 10 to Apr. 17.	Apr. 17 to Apr. 24.	A M
	Temperature, Fahrenheit			67.60°	71.38°	73.45°	72.82°	71.84°	7
	Relative humidity, per cent			66.4	66.4	71.2	57.4	66.1	5
1	Negus	1605	T. S. & J. D. Negus	+0.030	—0.036	+0.030	+0.043	+0.074	+
2	...do	1777	...do	—0.827	—1.000	—0.934	—0.921	—0.926	—
3	...do	285	Wm. Bond & Son	—1.149	—1.286	—1.327	—1.493	—1.604	—
4	...do	863	T. S. & J. D. Negus	+1.280	+1.179	+1.351	+1.364	+1.360	+
5	...do	1449 M. T. B. C.	...do	+0.959	+0.750	+1.066	+0.829	+0.646	+
6	...do	1266	...do	+0.244	+0.107	+0.173	+0.221	+0.181	+
7	...do	1229	...do	+2.173	+2.143	+2.316	+2.186	+2.289	+
8	Bliss	2829	John Bliss & Co	—1.363	—1.536	—1.684	—1.636	—1.533	—
9	Negus	425	Wm. Bond & Son	—0.113	—0.179	—0.041	+0.007	+0.181	+
10	...do	510	...do	—0.756	—0.750	—0.684	—0.850	—0.890	—
11	...do	1305	T. S. & J. D. Negus	+2.851	+2.714	+2.744	+2.757	+2.681	+
12	...do	1293	...do	+0.530	+0.214	+0.351	+0.543	+0.717	+
13	Bliss	2860	John Bliss & Co	—2.434	—2.464	—2.506	—2.421	—2.533	—
14	Negus	997	T. S. & J. D. Negus	+1.459	+1.071	+1.030	+1.150	+1.110	+
15	...do	1345	...do	+1.173	+1.000	+0.923	+1.007	+0.824	+
16	...do	1595	...do	+0.851	+0.750	+0.780	+0.829	+0.789	+
17	...do	293	Wm. Bond & Son	+0.744	+0.821	+0.923	+0.757	+0.681	+
18	...do	1295 S.B.C.	T. S. & J. D. Negus	+1.047	+0.981	+1.011	+1.060	+1.127	+
19	...do	1684 S.B.C.	...do	+1.083	+0.589	+0.404	+0.417	+0.484	+
20	...do	775	...do	—0.541	—0.929	—0.899	—0.921	—0.819	—
21	...do	1088	...do	+1.209	+0.857	+0.780	+0.829	+0.967	+
22	...do	599	...do	—0.970	—1.643	—1.613	—0.921	—0.854	—
23	...do	1097	...do	+1.030	+0.929	+0.959	+0.971	+0.824	+
24	...do	1299	...do	—1.113	—1.250	—1.149	—1.171	—1.176	—
25	Bliss	504	Wm. Bond & Son	—1.827	—2.464	—2.684	—2.743	—2.711	—

Relative number.	Repaired by—	Number of chronometer.	Maker.	May 1 to May 8.	May 8 to May 15.	Temperature of compensation.	Temperature, constant.	First trial number.
	Temperature, Fahrenheit			75.34°	75.90°			
	Relative humidity, per cent			68.4.	64.7.			
1	Negus	1605	T. S. & J. D. Negus	+0.166	+0.286	61.415°	0.0008057	3.5340
2	...do	1777	...do	—1.049	—0.964	70.605	—0.000546	4.6733
3	...do	285	Wm. Bond & Son	—1.834	—1.821	59.394	0.00104	5.8198
4	...do	863	T. S. & J. D. Negus	+1.559	+1.643	67.717	0.00259	8.2527
5	...do	1449 M. T. B. C.	...do	+0.809	+0.964	68.871	0.00267	8.9569
6	...do	1266	...do	+0.094	+0.036	70.807	0.00273	10.3954
7	...do	1229	...do	+2.309	+2.464	68.481	0.00302	11.8616
8	Bliss	2829	John Bliss & Co	—1.263	—1.357	74.886	0.00175	10.7918
9	Negus	425	Wm. Bond & Son	+0.059	0.000	108.774	—0.000528	12.3355
10	...do	510	...do	—0.620	—0.500	63.973	0.00223	12.0176
11	...do	1305	T. S. & J. D. Negus	+2.701	+2.859	65.647	0.00274	13.7376
12	...do	1293	...do	+0.630	+0.643	72.391	0.00264	13.5814
13	Bliss	2860	John Bliss & Co	—2.584	—2.464	67.564	0.00208	14.2389
14	Negus	997	T. S. & J. D. Negus	+0.987	+1.107	74.221	0.00285	15.4341
15	...do	1345	...do	+0.951	+1.143	76.229	0.00267	16.8450
16	...do	1595	...do	+0.773	+0.750	72.812	0.00377	18.4272
17	...do	293	Wm. Bond & Son	+0.951	+1.143	58.654	0.00261	18.3574
18	...do	1295 S.B.C.	T. S. & J. D. Negus	+1.114	+0.840	69.212	0.00400	18.3109
19	...do	1684 S.B.C.	...do	+0.257	+0.124	74.996	0.00349	20.5684
20	...do	775	...do	—0.906	—0.857	72.529	0.00295	22.0102
21	...do	1088	...do	+0.809	+0.964	83.646	0.00246	24.9010
22	...do	599	...do	—0.727	—0.929	78.546	0.00245	22.2733
23	...do	1097	...do	+0.844	+1.000	63.077	0.00321	34.3054
24	...do	1299	...do	—0.977	—0.429	67.614	0.00372	35.1909
25	Bliss	504	Wm. Bond & Son	—3.299	—3.393	—580.922	—0.0000301	58.8914

NOTE.—In temperature room from December 19 to February 18.
The sign + signifies losing; the sign — signifies gaining.

Record of competitive trial of chronometers, 1894 and 1895.

Relative number.	Number of chronometer.	Maker.	Dec. 19 to Dec. 26.	Dec. 27 to Jan. 3.	Jan. 4 to Jan. 11.	Jan 12 to Jan. 19.	Jan. 20 to Jan. 27.	Jan. 28 to Feb. 4.
		Temperature, Fahrenheit	54.98°	70.00°	85.02°	89.96°	84 99°	69.93°
		Relative humidity, per cent	70	70.7	70	70.8	70	69.2
1	1025	H. H Heinrich *a*	+1.431	+0.633	+0.633	+0.850	+0.676	+1.009
2	519	Wm. Bond & Son *b*	+2.289	+2.097	+2.419	+3.029	+2.533	+1.651
3	500	do. *b*	+0.503	+0.311	+1.311	+2 279	+0.676	—0.277
4	524	do. *b*	+0.289	+0.061	+1.061	+1.957	+1.319	+0.080
5	1021	H. H. Heinrich *c*	—1.211	—2.653	—3.117	—2.543	—3.074	—3 206
6	1023	do. *b*	+0.967	+1.419	+1.454	+2 064	+0.711	+0.009
7	995	do. *b*	—0.211	+0.526	+2.490	+3 350	+2.640	+1.401
8	994	do. *d*	+6.003	+5.561	+4.597	+4.743	+4.961	+5.687
9	1022	do *e*	+1.824	+0.740	+0.847	+1.529	+0.997	+0.723
10	511	Wm. Bond & Son *f*	+2.140	+3.597	+4.669	+5.520	+3.890	+2.366
11	528	do. *b*	+3.253	+1.454	+0.454	+1.029	+0.390	+0 401
12	990	H. H Heinrich *b*	+2.003	+1.061	+1.169	+1.457	+0.283	—0.420
13	495	Wm. Bond & Son *b*	—0.783	—1.581	—0.653	+1.600	+1.319	+0.651

Relative number.	Number of chronometer.	Maker.	Feb. 5 to Feb. 10.	Feb. 11 to Feb. 18	Feb. 20 to Feb. 27.	Feb. 27 to Mar. 6.	Mar. 6 to Mar. 13.	Mar. 13 to Mar. 20.
		Temperature, Fahrenheit	55°	45 12°	63.91°	70.05°	73.26°	69.77°
		Relative humidity, per cent	67.4	72	52.4	52	51.2	61.1
1	1025	H. H. Heinrich *a*	+1.080	+2.373	+1.709	+1.189	+0.773	+0.690
2	519	Wm. Bond & Son *b*	+2.080	+3.587	+1.316	+1.581	+2.344	+1.940
3	500	do. *b*	—0.020	+1.337	—0.501	—0.494	—0.406	—0.739
4	524	do. *b*	+0.980	+2.301	+0.673	+0.724	+0.701	+0.619
5	1021	H. H. Heinrich *c*	—1.620	—0.449	—2.577	—3.419	—3.656	—3.381
6	1023	do. *b*	+0.880	+1.480	+1.744	+1.581	+1.559	+1.047
7	995	do. *b*	+0.880	+1.587	+0.101	+0.117	+0.166	—0.274
8	994	do. *d*	+5.580	+7.194	+1.280	+1.831	+1.844	+1.119
9	1022	do. *e*	+2.880	+4.230	+1.887	+1.510	+1.309	+1.476
10	511	Wm. Bond & Son *f*	+1.580	+2.409	+1.566	+1.439	+1.380	+1.154
11	528	do. *b*	+2.230	+5.016	—0.613	—0.776	—0.870	—0.060
12	990	H. H. Heinrich *b*	+0.980	+1.944	+0.601	+0.474	+0.273	+0.083
13	495	Wm. Bond & Son *b*	+0.430	+1.944	—0.577	—0.919	—0.977	—0.774

Relative number.	Number of chronometer.	Maker.	Mar. 20 to Mar. 27.	Mar. 27 to Apr. 3.	Apr. 3 to Apr. 10.	Apr. 10 to Apr. 17.	Apr. 17 to Apr. 24.	Apr. 24 to May 1.
		Temperature, Fahrenheit	67.60°	71.38°	73.45°	72.82°	71.84°	73.84°
		Relative humidity, per cent	66.4	66.4	71.2	57.4	66.1	59.3
1	1025	H. H. Heinrich *a*	+0.744	+0.429	+0.387	+0.257	+0.396	+0.263
2	519	Wm. Bond & Son *b*	+2.209	+2.000	+1.173	+1.079	+0.860	+0.763
3	500	do. *b*	—0.827	—0.750	—0.649	—0.743	—0.854	—0.666
4	524	do. *b*	+0.601	+0.679	+0.566	+0.650	+0.431	+0.584
5	1021	H. H. Heinrich *c*	—3.184	—3.321	—3.113	—3.136	—3.211	—3.201
6	1023	do. *b*	+1.173	+1.571	+1.601	+0.507	+0.931	+1.013
7	995	do. *b*	—0.220	+0.179	+0.566	—0.029	—0.319	+0.156
8	994	do. *d*	+0.673	+0.643	+1.137	+1.150	+0.789	+1.584
9	1022	do. *e*	+1.923	+1.536	+1.494	+1.579	+1.467	+1.334
10	511	Wm. Bond & Son *f*	+1.137	+1.071	+1.137	+1.150	+1.146	+1.156
11	528	do. *b*	—0.077	—0.179	—0.077	+0.114	—0.319	+0.156
12	990	H. H. Heinrich *b*	+0.030	—0.179	—0.113	+0.007	+0.146	+0.120
13	495	Wm. Bond & Son *b*	—0.149	—0.607	—0.399	—0.386	—0.640	—0.380

a Heinrich's patent auxiliary for heat and cold.
b Ordinary balance.
c Ordinary balance with auxiliary check pieces acting in heat and cold.
d Ordinary balance and reverse movement.
e Same as No. 1021, with isochronous regulator.
f Hartnup balance.

Record of competitive trial of chronometers, 1894 and 1895—Continued.

Relative number.	Number of chronometer.	Maker.	Time: May 1 to May 8. Temperature, Fahrenheit: 75°.34. Relative humidity, per cent: 68.4	Time: May 8 to May 15. Temperature, Fahrenheit: 75°.90. Relative humidity, per cent: 64.7	Temperature of comensation.	Temperature constant.	First trial number.	Final trial number.
					°			
1	1025	H. H. Heinrich *a*	+0.023	+0.214	80.967	0.00160	12.3868	16.0349
2	519	Wm. Bond & Son *b*	+0.880	+1.071	67.604	0.00203	9.4692	20.5515
3	500	do. *b*	−0.620	−0.643	65.302	0.00267	20.3902	21.1930
4	524	do. *b*	+0.344	+0.679	67.521	0.00374	20.3657	21.8563
5	1021	H. H. Heinrich *c*	−3.227	−3.107	79.349	0.00299	23.6389	25.5961
6	1023	do. *b*	+0.666	+0.643	67.935	0.00129	23.8933	35.5828
7	995	do. *b*	+0.237	+0.429	52.796	0.00216	36.1034	40.1797
8	994	do. *d*	+2.523	+2.857	58.774	−0.00150	23.0579	43.5516
9	1022	do. *e*	+1.273	+0.250	75.924	0.00402	32.7967	44.6234
10	511	Wm Bond & Son *f*	+1.273	+1.286	−30.856	0.000399	40.9728	47.0205
11	528	do *b*	+0.309	+0.750	83.310	0.00290	37.1569	49.3161
12	990	H. H. Heinrich *b*	+0.201	+0.357	73.642	0.00350	53.6597	54.8918
13	495	Wm. Bond & Son *b*	−0.441	−0.429	66.472	0.00241	96.9087	101.8905

a Heinrich's patent auxiliary for heat and cold.
b Ordinary balance.
c Ordinary balance with auxiliary check pieces acting in heat and cold.
d Ordinary balance and reverse movement.
e Same as No. 1021, with isochronous regulator.
f Hartnup balance.
NOTE.—In temperature room from December 19 to February 18.
The sign + signifies losing; the sign — signifies gaining.

During the year 31 standard and 8 hack chronometers were issued, and 23 standard and 5 hack chronometers were received from ships. Three standard chronometers were condemned as such and transferred to the hack list.

Three standard and 20 hack chronometers were condemned for use and withdrawn from issue.

The operation of the time service has been entirely satisfactory, so far as transmitting the signal from the Observatory is concerned. The average error for the year of time signals sent out was 0.22^s, and the maximum resulting from changes of rate during a long period of weather unfavorable for observing was 1.29^s. The interval from July 21 to August 12 is not included in determining average and maximum error. During this time, owing to unforeseen causes (the absence of one and the sudden illness of the other officer attached to the time service), the signals were sent out by persons not fully familiar with the methods.

It must not be assumed, however, that these figures represent the errors of timekeepers that were corrected by the Observatory signals. By the methods used in repeating signals and transmitting them to long distances, over which the Observatory has no control, other errors may have crept in. Nevertheless, it may be confidently stated that these errors were rarely ever considerable, and that the time actually received was sufficiently correct for all practical purposes.

DEPARTMENT OF MAGNETISM AND METEOROLOGY.

[Lieut. C. C. MARSH, U. S. N., in charge to June 25; Lieut. DAVID PEACOCK, U. S. N., in charge from June 25; Electrician J. N. JAMES, assistant.]

The work done in this department during the year was:

I. Perfecting, adjusting, and keeping in perfect working order the following instruments:

In the vault: 1 Kew horizontal force magnetometer; 1 Kew vertical force magnetometer; 1 Kew declination magnetometer; 1 Mascart vertical force magnetometer; 1 thermograph; 1 thermostat for regulating the gas supply; 1 polymeter (Lambrecht's).

In the observation room and office: 1 declinometer; 1 theodolite; 1 horizontal force instrument, or magnetic theodolite; 1 dip circle.

These instruments need atttention each day to see that they are in adjustment.

II. Taking observations and making experiments as follows:

(1) Deflection experiments for determining the value of a millimeter on the magnetogram scale. These experiments have to be made during the night after the electric cars have stopped running.

(2) Temperature experiments are made from time to time.

(3) Deflection experiments with the horizonal force instrument; vibration experiments and experiments for torsion with the same instrument. These experiments are made about every third day.

(4) Observations for dip with the dip circle are made about every third day.

(5) Whenever the declinometer readings show any marked change that can not be accounted for, the declination must be determined by observing a star or other heavenly body, and the theodolite and declinometer readjusted.

III. The following new instruments have been installed during the past year: 1 Mascart vertical-force magnetometer, 1 thermograph, 1 polymeter, 1 thermostat.

The Mascart vertical-force magnetometer was required, as the Kew vertical-force instrument was so delicate that it often upset during magnetic storms, thus causing the loss of the record when it was particularly needed. The new instrument is so constructed that it is almost impossible to upset it; at the same time it is more delicate in recording the changes in the vertical force. Its record agrees perfectly with the Kew instrument.

The thermograph was made from a Draper's self-recording thermometer by Lieutenants Marsh and Peacock by taking out the clock and placing a mirror on the recording arm, then placing a prismatic lens so that a ray of light is thrown on the sensitized paper of the Mascart magnetogram, thus giving a continuous record of the temperature. This, though simple, is a very valuable addition to the instruments, as the correct temperature at all times is a very important factor when experimenting with magnets.

The thermostat has worked satisfactorily in regulating the supply of gas.

IV. The records for the year ending January 16, 1895, are now in the hands of the Public Printer.

V. The following instruments have been ordered and will be installed during the present fiscal year: 1 Dr. Wild's latest magnetic theodolite or horizontal force instrument, with all the latest improvements; 1 Dr. Wild's latest improved dip circle; 1 latest improved earth inductor; 1

balance galvanometer and telescope and scale; 1 quadrant electrometer and commutator; 1 beam suspension scale. Upon the installation of these instruments the magnetic department of the Observatory will be equal in outfit to any in the world.

The meteorological observations are made and recorded by the watchmen in the main building (Messrs. Horigan, Cahill, and Henderson).

BUILDINGS AND GROUNDS.

The attention of the Bureau has been called by a special report of Mr. William J. Marsh, architect, to the condition of the main building, and an estimate has been submitted of the cost of remedying the defects pointed out. It is important that provision for this work be made at the next session of Congress, otherwise the expense of it will be greatly increased by further deterioration. The other buildings are in good condition. Satisfactory progress has been made in grading and improving the grounds and roads.

LIBRARY.

The library has been under the supervision of a committee composed of the Director of the Nautical Almanac (Prof. S. Newcomb, U. S. N.), the Astronomical Director (Prof. William Harkness, U. S. N.), and the assistant to the Superintendent (Lieut. Commander Walton Goodwin, U. S. N.). Assistant Librarian William D. Horigan performed the duties of librarian.

The contents of the library at the beginning and end of the fiscal year 1894–95, as shown by the accession book, were as follows:

	Volumes.	Pamphlets.	Total.
Contents, 1894, July 1	14,496	3,263	17,759
Accessions during 1894–95	410	23	433
Contents, 1895, June 30	14,906	3,286	18,192

Of the 433 accessions, 162 were received as exchanges and 271 were purchased.

Very respectfully,

R. L. PHYTHIAN,
Commodore, United States Navy,
Superintendent of Naval Observatory.

The CHIEF OF THE BUREAU OF EQUIPMENT.

The following is the report of the naval inspector of electric lighting:

NAVY DEPARTMENT, BUREAU OF EQUIPMENT,
Washington, D. C., September 14, 1895.

SIR: I have the honor to submit the following report of work done under the supervision of this office during the past year:

NEW SHIPS.

Work on the electric plants of new ships under construction has been continued as rapidly as the other work on them would permit. The plants of the following ships have been entirely completed, viz: The *Minneapolis*, *Olympia*, *Amphitrite*, *Maine*, *Texas*, and *Katahdin*, and those of the *Indiana*, *Massachusetts*, *Oregon*, and *Monadnock* are nearly com-

pleted. Work has been begun on the plants of the *Terror*, *Puritan*, *Iowa*, *Brooklyn*, and gunboats Nos. 7, 8, and 9. Owing to a change in location of the dynamo room of the *Brooklyn*, a new light list and wiring plan became necessary and were made.

SHIPS IN COMMISSION.

Such repairs as were found necessary in order to keep their electric plants in an efficient condition have been made.

The *Lancaster* has been supplied, mostly from available material on hand, with a small plant to be used for the purpose of instructing her crew in the use of search lights and electric signals.

PLANT OF THE CHICAGO.

The plant of this ship, installed nearly ten years ago, has in general given excellent results, owing largely to the thorough supervision given to its installation and the intelligent care it has since received. The generators, however, are now worn, are of too small capacity, and are also of a less efficient type for ship's use than later designs. Much of her wiring and other material is worn out and would have to be renewed. The extensive changes contemplated in her interior will necessitate a general rearrangement of circuits and distribution of fixtures, etc. It is therefore designed that this ship be given a new electric plant throughout.

ELECTRIC MATERIAL.

The work of standardizing, as far as possible, all electrical apparatus and material supplied to ships of the Navy has been continued.

SEARCH LIGHTS.

Projectors of a new design have been completed and furnished to the *Minneapolis*, *Maine*, and *Indiana*, which are lighter, and it is believed more effective, than those hitherto supplied.

The lamps are of the horizontal carbon type, fitted for both automatic and hand regulation. They are simple and strong and have given excellent results so far as they have been tried. The projectors can be operated either by an electric controller from a distance, or by hand, as desired. The electrical-control mechanism is actuated by an independent current, and is operated by the motions of a single lever so arranged that the beam of light moves in the same direction as the lever in both vertical and horizontal planes. The controller is both small and light and can be either fixed permanently or moved about as desired. Some of the projectors have been fitted with Mangin short focus mirrors, and some with parabolic, in order to determine, if possible, the disputed point of relative superiority by practical trial under service conditions. As the projectors are made to take either mirror, one type can be exchanged for the other at any time without other change in the projector.

EXPERIMENTAL WORK.

The importance of having a thoroughly reliable and effective means for signaling the order to close water-tight doors so that it may be unmistakably heard and understood in all parts of a ship, especially in large and much subdivided vessels, is well understood. Experience has proved that a steam whistle above the upper deck can not be heard

in some of the lower parts of a ship; bugles or drums labor under the same difficulty, beside requiring time to get them sounded; a system of electric gongs or bells to be effective must be complicated, and is therefore liable to get out of order. It has been thought that if a considerable number of siren whistles, located throughout a ship so as to be heard in every compartment, can be simultaneously and with certainty blown when desired, it would form a satisfactory device. Experiments are being made, with satisfactory results thus far, to test the practicability of thus blowing as many as eighteen whistles, placed at intervals on a small pipe, by means of air compressed to a safe and moderate degree. If this can be accomplished with success, a small air reservoir, with a pipe leading from it to the pilot house or bridge, where a valve would be placed, and thence to the several compartments in which it would be desirable to locate whistles, is proposed.

Other experiments are contemplated with the view of ascertaining the expediency of substituting a tangential water wheel for the steam engine as a motor for driving ships' dynamos. The advantages to be derived, such as freedom from steam heat in the dynamo room, avoidance of vibration and noise, ease of attendance, economy in repairs, etc., are great, and if it is found that a water wheel can be made to govern automatically so closely as to drive a dynamo at a practically uniform speed under all conditions of load, and a satisfactory method can be devised for securing and maintaining the requisite water pressure, the adoption of this form of motor would seem desirable.

The practice of installing a system of electric water alarms in the double bottoms of ships has been discontinued, for the reason that experience in the service has shown these alarms to be of little or no practical value, owing to the difficulty of keeping such a necessarily complicated system in good order. Unless they are entirely reliable at all times, such alarms are worse than useless, as they are misleading.

Ensign H. E. Parmenter, United States Navy, has ably assisted in the work of this office during the year.

Respectfully submitted.

W. MAYNARD,
Commander, United States Navy.

The CHIEF OF BUREAU OF EQUIPMENT.

The following is the report of the superintendent of compasses:

COMPASS OFFICE, BUREAU OF EQUIPMENT,
NAVY DEPARTMENT,
Washington, D. C., September 28, 1895.

SIR: I have the honor to submit the following report of the operations of this office during the past year:

Compass reports, reports of magnetic surveys, and dock observations relating to compasses have been received and, after examination and discussion, placed on file; the usual routine of the office has been carried on and useful experiments have been made; inventions pertaining to methods of compensating compasses submitted to the office have been examined and reported upon; parts of new instruments have been examined in detail in the office, such changes in construction or method of adjustment as seemed advisable made or indicated, and the final examination of the completed instruments made at the manufacturers. Observations for location, adjustment, and compensation of the compasses and approximate or complete compensations have been made by the officers of the office in the following vessels: *Raleigh, Detroit, Cin-*

cinnati, *Castine*, *Dolphin*, *Machias*, *New York*, *San Francisco*, *Vesuvius*, *Minneapolis*, *Katahdin*, *Maine*, *Amphitrite*, *Texas*, *Indiana*, *Nina*, and a (*Texas*) torpedo boat. Approximate locations for compasses have been suggested from the plans submitted for other vessels now under construction.

Fourteen officers have received instructions in the office in the practical compensation of compasses. The short course here given is of great value to any officer taking it and of special importance to those who may soon become navigating officers of the new vessels. So marked have been the results of the course, I recommend that the instruction be continued, and suggest that when possible officers be ordered in groups or classes of three or four members.

New instruments have been supplied as follows: Twenty-four azimuth circles, 18 bars and pintles (6 aluminium), 6 service-compensating binnacles (aluminium), 100 boat compasses (2½-inch), 15 peloruses, double standard (3 aluminium), 6 sets of magnets (for semicircular deviation correctors).

Repairs have been made as follows: Thirty-three service (7½-inch) compasses (20 of these, of obsolete type, have been changed to service pattern), 7 boat compasses (4-inch). By a slight modification 6 of these were made serviceable compasses with compensating binnacles for use in conning towers, torpedo boats, etc., and will be known as "conning binnacles."

The use of aluminium for binnacles, peloruses, etc., is as yet experimental. If, after exhaustive trial, this metal is found suitable, its adoption will be recommended, the weight being only about one-third that of the composition heretofore used.

The double-standard pelorus designed by Lieut. C. P. Perkins, recently in charge of this office, has been adopted.

There are many obsolete and otherwise unserviceable instruments, not capable of conversion or worth repairs, at the various navy-yards and stations, the sale of which is recommended.

Observations recently taken on board of the *Indiana* show that the horizontal force exerted by the iron in the vicinity (chiefly the mast) upon the compass needles (placed in the only possible positions permitted by the present arrangement and size of the pilot house) is nearly twice the horizontal or directive force of the earth; and to obtain a fairly good position for a standard compass it will be necessary to erect a platform or bridge over the after part of the bridge deck and to change the material of the ventilators near, at least in part.

As an illustration of the importance of using only nonmagnetic material, when possible, in the vicinity of the compasses, I wish to call your attention to the fact that by substituting nonmagnetic material in the ventilators passing through the pilot house of the *Maine*, as also in certain parts of the steering gear, the maximum deviation of the standard compass of that vessel has been reduced from 180° each way to about 8°.

In view of the facts above mentioned and of the absolute necessity for safe navigation, of obtaining a good position for a standard compass, I earnestly recommend that such a place be taken into consideration in preparing original (detail) plans of new vessels.

During the year the personnel of the office has been changed. Ensign T. P. Magruder reported for duty in November, 1894, and has ably and efficiently assisted in the performance of the duties in the office and in the practical compensation of compasses in the new ships; Lieut. W. W. Buchanan was detached in January, 1895; Lieut. G. B. Harber reported

for duty in July, 1895, and upon the detachment of Lieut. C. P. Perl August 2, 1895, succeeded him in charge of the office. In this con tion I wish to state that while the number of new vessels has incre and the work of the office has much increased in consequence, the f for doing the work has been decreased. To perform fully and efficie the various duties, I deem an additional assistant necessary.

Very respectfully,

GILES B. HARBER,
Lieutenan

The CHIEF OF BUREAU OF EQUIPMENT.

The following are the estimates for the Bureau of Equipment branches for the coming fiscal year:

Estimates of appropriations required for the service of the fiscal year ending June 30, by the Bureau of Equipment, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amo appro for t current year en June 30
SALARIES.			
One chief clerk (R. S., p. 70, sec. 416; appropriated Mar. 2, 1895, pamphlet edition, leg. and ex. bill, p. 31)	$1,800		
Two clerks of class 2 (same acts)	2,800		
Two copyists, at $900 each (same acts)	1,800		
One assistant messenger (same acts)	720		
One laborer (same acts)	660		
Total		$7,780	
EQUIPMENT OF VESSELS.			
For purchase of coal for steamers' and ships' use, including expenses of transportation, storage, and handling the same; hemp, wire, iron, and other materials for the manufacture of cordage, anchors, cables, galleys, and chains; canvas for the manufacture of sails, awnings, hammocks, and other work; water for steaming purposes; stationery for commanding and navigating officers of ships, equipment officers on shore and afloat, and for the use of courts-martial on board ship, and for the purchase of all other articles of equipment at home and abroad, and for the payment of labor in equipping vessels and manufacture of equipment articles in the several navy-yards; foreign and local pilotage and towage of ships of war; services and materials in repairing, correcting, adjusting, and testing compasses on shore and on board ship; nautical and astronomical instruments and repairs to same; libraries for ships of war; professional books and papers, and drawings and engravings for signal books; naval signals and apparatus, namely, signals, lights, lanterns, rockets, running lights; compass fittings, including binnacles, tripods, and other appendages of ships' compasses; logs and other appliances for measuring the ships' way, and leads and other appliances for sounding; lanterns and lamps, and their appendages for general use on board ship for illuminating purposes, and oil and candles used in connection therewith; bunting and other material for making and repairing flags of all kinds; photographic instruments and materials; musical instruments and music; and installing and maintaining electric plants and interior signal communications on board vessels of war (appropriated Mar. 2, 1895, pamphlet edition naval bill, pp. 14, 15)		1,312,147	1,2
CONTINGENT.			
For freight and transportation of equipment stores, packing boxes and materials, printing, advertising, telegraphing, books and models, stationery for the Bureau, furniture for equipment offices in navy-yards, postage on letters sent abroad, ferriage, ice, lighterage of ashes, and emergencies arising under cognizance of the Bureau of Equipment unforeseen and impossible to classify (appropriated Mar. 2, 1895, pamphlet edition naval bill, p. 15)		12,000	

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Equipment, Navy Department—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation	Amount appropriated for the current fiscal year ending June 30, 1896.
INCREASE OF THE NAVY EQUIPMENT.			
Toward the completion of the equipment outfit of the new vessels heretofore authorized by Congress (appropriated Mar. 2, 1895, pamphlet edition naval bill, p. 9)	.....	$287,500	$125,000
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H. (appropriated Mar. 2, 1895, pamphlet edition naval bill, p. 15):			
One clerk	$1,200		
One clerk	1,000		
Navy-yard, Boston, Mass. (same act, p. 15):			
One superintendent of ropewalk	1,875		
One clerk	1,400		
One clerk	1,300		
One writer	950		
Navy-yard, New York, N. Y. (same act, p. 16):			
One clerk	1,400		
One clerk	1,200		
One writer	1,000		
One storekeeper	900		
Navy-yard, League Island, Pa. (same act, p. 16):			
One clerk	1,200		
Navy-yard, Norfolk, Va. (same act, p. 16):			
Two clerks, at $1,200 each	2,400		
Navy-yard, Washington, D. C. (same act, p. 16):			
One clerk, who shall also perform the clerical duties for the board of labor employment at said navy-yard	1,600		
Navy-yard, Mare Island, Cal. (same act, p. 16):			
One clerk	1,200		
One clerk	1,000		
Total	.....	19,625	19,625

Schedule of bids for coal and provender at the Naval Observatory, opened May 9, 1895.

Class 1.—Coal:	
V. Baldwin Johnson	$4,455.00
Mayfield & Hieston	4,266.00
Trustees of Geo. L. Sheriff	4,806.00
J. Edward Chapman	4,365.00
J. Maury Dove	*4,086.00
John B. Daish	4,608.90
Class 2.—Provender:	
E. B. Earnshaw	473.50
W. M. Galt & Co	*449.75
Class 2.—Provender—Continued.	
Danenhower & Co	$486.20
John B. Daish	461.90
John J. O'Day	553.35
Class 3.—Ice:	
Independent Ice Company, per hundred	*.30
Great Falls Ice Company, per hundred	.35

* Awarded.

Schedule of bids for two brick dwellings at Naval Observatory grounds, opened July 6, 1895.

Jas. R. Young	$13,355.00	Peter Hepburn	$12,269.00
George H. Lowery	15,256.00	Stewart & Walter (informal)	14,593.00
Darby & Davis	13,739.00	A. W. Sweeney	13,530.00
Manning & Parsons	15,697.00	Smith Bros. (informal)	13,764.00
Levy & Fedeline	12,200.00	W. T. Garrison	12,303.00
W. W. Winfree	14,694.00	C. Thomas	11,900.00
Henry F. Geitz	12,158.00	John G. Bright	13,331.00
Daniel F. Mocabee	11,460.00	Francis L. Carmody	11,985.00
Reese F. Lukie	17,691.10	John Simpson & Sons	13,772.00
Philip F. Gormley	11,472.00	Richardson & Burgess	12,995.00
W. E. Speir & Co	12,450.00		

Appropriation for dwellings, $10,000. No award made.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the United States Naval Observatory.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES, NAVAL OBSERVATORY.			
One assistant astronomer (R. S., p. 27, sec. 167; Aug. 5, 1882, vol. 22, p. 245, sec. 1; Mar. 2, 1895)	$2,000		$2,000
Two assistant astronomers, at $1,800 each (same)	3,600		3,600
One clerk of class 4 (same)	1,800		1,800
One instrument maker (same)	1,500		1,500
One electrician (same)	1,500		1,500
One photographer (same)	1,200		1,200
Five computers, at $1,200 each (same)	6,000		6,000
One assistant librarian (same)	1,200		1,200
One copyist (substitute clerk class 1, an increase of $300 submitted) *a* (same)	1,200		900
One skilled laborer, foreman, and captain of the watch (omit words "skilled laborer") *b* (same)	1,000		1,000
One carpenter (same)	1,000		1,000
One engineer (same)	1,000		1,000
One skilled laborer (same)	720		720
Four firemen, at $720 each (two submitted) *c* (same)	2,880		1,440
Six watchmen, at $720 each (same)	4,320		4,320
One elevator conductor (same)	720		720
Eleven laborers, at $660 each (same)	7,260		7,260
Total		$38,900	37,160
CONTINGENT AND MISCELLANEOUS EXPENSES.			
Miscellaneous computations (Mar. 2, 1895)	1,200		1,200
Professional and scientific books, periodicals, engravings, photographs, and fixtures for the library (same act)	1,000		1,000
Apparatus and instruments, and for the repairs of the same (same act)	2,500		2,500
Repairs to buildings, fixtures and fences, furniture, gas, chemicals, and stationery; freight (including transmission of public documents through the Smithsonian exchange); foreign postage and expressage; plants, fertilizers, and all contingent expenses (increase of $500 submitted) *d* (same act)	3,000		2,500
Fuel, oil, grease, tools, pipe, wire, and other materials needed for the maintenance and repair of boilers, engines, heating apparatus, electric lighting and power plant, and water-supply system; purchase and maintenance of teams; material for boxing nautical instruments for transportation; paints, telegraph and telephone service, and incidental labor (same act)	7,500		7,500
Total		15,200	14,700

a The class of work now performed by this copyist, as well as the faithful manner in which he has discharged his duties for the past four years, warrant his promotion.

b The words "skilled laborer" do not describe the duties of this position. They are superfluous and sometimes confusing. It is recommended that they be omitted, leaving the correct title "foreman and captain of the watch."

c The heating apparatus, electric lighting and power plant, and auxiliary water supply system consist of three boilers and two dynamos in separate buildings; a deep well steam pump about 600 feet distant from the power house; pressure tank for elevator and movable floor in great dome; steam heating and electric conduits of several thousand feet through tunnels and underground, and a system of overhead wires for lighting grounds. Properly to care for these and to run the dynamos at night demand the increase of firemen asked for.

*d Repairs * * * and all contingent expenses.*—The amount asked for ($3,000) is $1,550 less than that appropriated for 1892. The amount appropriated for 1896 ($2,500) is not much more than is required for the above items other than repairs, leaving a very small amount available for current repairs, the want of which is leading to deterioration that, if further overlooked, will soon make extensive and costly repairs necessary. This necessity may be avoided by the judicious annual expenditures of the increase asked for.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the United States Naval Observatory—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
Public works under the Navy Department.			
GROUNDS AND ROADS—NEW NAVAL OBSERVATORY.			
For continuing grading, extending roads and paths, clearing and improving grounds of New Naval Observatory (Mar. 2, 1895)	$10,000		$12,000
NEW BUILDINGS.			
Increase of appropriation (act of Mar. 2, 1895) "for quarters for observers, two buildings, at $5,000 each, $10,000" (submitted)	2,500		
NOTE.—Plans and specifications were prepared for the smallest and cheapest houses that were deemed suitable, and bids were invited by advertisement. The bids were all in excess of the amount appropriated and no one could be accepted. It is estimated that the above additional amount is necessary to secure buildings constructed of brick or other suitable material.			
For repairs to main building (submitted)	1,800		
Total		$14,300	12,000

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Nautical Almanac Office.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES.			
Salaries of assistants in preparing for publication the American Ephemeris and Nautical Almanac, viz:			
Three assistants, at $1,600 each (Aug. 5, 1882, vol. 22, p. 245, sec. 1; Mar. 2, 1895, vol. 28, p 792, sec. 1)	$4,800		
Two assistants, at $1,400 each (same acts)	2,800		
Three assistants, at $1,200 each (same acts)	3,600		
Two assistants, at $1,000 each (same acts)	2,000		
One copyist and typewriter (same acts)	900		
One assistant messenger (same acts)	720		
One laborer (same acts)	660		
		$15,480	$15,480
PAY OF COMPUTERS ON PIECEWORK.			
Pay of computers on piecework in preparing for publication the American Ephemeris and Nautical Almanac and in improving the tables of the planets, moon, and stars (Mar. 2, 1895, vol. 28, p. 792, sec. 1)	7,000	7,000	7,000
Total		22,480	22,480

Very respectfully,

F. E. CHADWICK,
Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT

OF

THE CHIEF OF THE BUREAU OF NAVIGATION.

NAVY DEPARTMENT, BUREAU OF NAVIGATION,
Washington, D. C., October 17, 1895.

SIR: I have the honor to submit herewith a report (marked A) of the movements and duties of the ships of the Navy during the past year, a copy (marked B) of the report of the Superintendent of the Naval Academy, a copy (marked C) of the report of the commandant of the Training Station, a copy (marked D) of the report of the president of the Naval War College and Torpedo School, and a copy (marked E) of the report of the hydrographer to the Bureau of Navigation.

Estimates for the support of the Bureau, the Naval Academy, the Training Station, the Naval War College and Torpedo School, and the Hydrographic Office are also submitted (marked F).

During the year the *Minneapolis*, *Maine*, *Texas*, *Olympia*, *Amphitrite*, *Lancaster*, *Marion*, and *Alliance* have been commissioned for service. The *Chicago*, *Minnesota*, *Miantonomoh*, *Atlanta*, *Monongahela*, *Mohican*, *Adams*, *Portsmouth*, and *Vesuvius* have been put out of commission.

Four American steamships tendered by the International Navigation Company have, in accordance with the provisions of the postal subsidy act approved March 3, 1891, and at the request of the Postmaster-General, been inspected, tested, and classified.

During the fiscal year ended June 30, 1895, 3,912 men and 348 apprentices were enlisted or reenlisted in the Navy. More than 25 per cent of the men enlisted under continuous service.

One hundred and fifty-eight special-service men were enlisted for the Coast and Geodetic Survey, and 114 special-service men were enlisted for the vessels of the Fish Commission.

Sixteen hundred and sixty-seven men and 736 boys, candidates for enlistment, were rejected for physical disqualifications, and 4,387 men and 837 boys were rejected for other causes; 2,801 men and 297 apprentices were discharged—2,036 men and 183 apprentices by reason of expiration of enlistment, 128 men and 30 apprentices for disability, 196 men by reason of services being no longer required, 122 men and 2 apprentices at their own request, 43 men and 7 apprentices by purchase, 5 men by request of their commanding officers, 171 men and 38 apprentices for bad conduct, 3 men on account of illegal enlistment, 22 men and 31 apprentices for inaptitude, and 75 men and 6 apprentices as undesirable. Seven hundred and fifteen men and 173 apprentices deserted during the year. Of this number 638 men and 161 apprentices deserted in home ports. Forty-eight men and 10 boys died.

Under sections 4756 and 4757 of the Revised Statutes 38 pensions have been allowed and 8 disallowed.

Four thousand five hundred and seventy-nine dollars and eleven cents has been paid to enlisted men in prizes for target practice with great guns, machine guns, and small arms.

At the close of the fiscal year more than 31 per cent of the enlisted men in the Navy were serving under continuous service. More than 69 per cent of the enlisted men were American citizens, and more than 81 per cent of the apprentice boys were American born.

F. M. RAMSAY, *Chief of Bureau.*

The SECRETARY OF THE NAVY.

A.

THE COMPOSITION OF THE SQUADRON ON EACH STATION AND THE DUTIES PERFORMED BY EACH VESSEL.

NORTH ATLANTIC STATION.

Commanders in chief: Rear-Admiral R. W. Meade until May 9, 1895, and Rear-Admiral F. M. Bunce since June 27, 1895.

Ships: *New York* (flagship), *Columbia*, *Minneapolis*, *San Francisco*, *Miantonomoh*, *Amphitrite*, *Cincinnati*, *Raleigh*, *Atlanta*, *Montgomery*, *Marblehead*, and *Vesuvius*.

ASIATIC STATION.

Commander in chief: Rear-Admiral C. C. Carpenter since August 28, 1894.

Ships: *Olympia*, *Baltimore* (flagship), *Charleston*, *Detroit*, *Concord*, *Yorktown*, *Monocacy*, *Machias*, and *Petrel*.

PACIFIC STATION.

Commander in chief: Rear-Admiral L. A. Beardslee since August, 24, 1894.

Ships: *Philadelphia* (flagship), *Monterey*, *Charleston*, *Mohican*, *Marion*, *Bennington*, *Alert*, and *Ranger*.

SOUTH ATLANTIC STATION.

Commander in chief: Rear-Admiral C. S. Norton since January 19, 1895.

Ships: *Newark* (flagship), *Castine*, and *Yantic*.

EUROPEAN STATION.

Commander in chief: Rear-Admiral W. A. Kirkland since September 12, 1894.

Ships: *New York*, *Columbia*, *San Francisco* (flagship), and *Marblehead*.

SHIPS ON SPECIAL SERVICE.

Dolphin, *Alliance*, *Essex*, *Thetis*, *Fern*, *Bancroft*, *Michigan*, *Pinta*, and *Cushing* (torpedo boat.)

SHIPS UNASSIGNED TO STATIONS.

Maine, *Texas*, and *Lancaster*.

The composition of the squadron on each station and the duties performed by each vessel—Continued.

FIRST RATE.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
New York, Capt. R. D. EVANS, commanding						Flagship, North Atlantic Station.
Navy-yard, New York	Aug. 16, 1894	Jan. 10, 1895				
Tompkinsville, Staten Island	Jan. 10, 1895	Jan. 12, 1895	10	8.1	17.5	
Hampton Roads, Va	Jan. 13, 1895	Jan. 30, 1895	255	11.1	124	
Samana Bay, Haiti	Feb. 4, 1895	Feb. 4, 1895	1,250	10.2	273.3	
St. Thomas, Dutch West Indies	Feb. 5, 1895	Feb. 9, 1895	241	11	49.8	
Santa Cruz, Dutch West Indies	Feb. 9, 1895	Feb. 11, 1896	35	9.6	16	
Martinique, French West Indies	Feb. 11, 1895	Feb. 14, 1895	323	10.4	47.2	
St. Lucia, British West Indies	Feb. 14, 1895	Feb. 19, 1895	43	8.6	20	
Barbados, British West Indies	Feb. 20, 1895	Feb. 28, 1895	132	8	31.25	
Trinidad, British West Indies	Mar. 1, 1895	Mar. 12, 1895	190	9	44.8	
La Brea Point, Trinidad	Mar. 12, 1895	....do	20	10	12	
Trinidad, British West Indies	....do	Mar. 13, 1895	20	10	12	
La Guayra, Venezuela	Mar. 14, 1895	Mar. 18, 1895	352	12.6	105.2	
San Domingo, Haiti	Mar. 20, 1895	Mar. 22, 1895	538	11.6	141.2	
Kingston, Jamaica, British West Indies	Mar. 24, 1895	Apr. 8, 1895	453	11.3	91	
Port au Prince, Haiti	Apr. 9, 1895	Apr. 11, 1895	276	11.2	73	
Colon, Colombia	Apr. 14, 1895	Apr. 20, 1895	815	11.7	193	
Key West, Fla	Apr. 24, 1895	Apr. 24, 1895	1,075	11.5	266	
New York, N. Y	Apr. 28, 1895	May 18, 1895	1,180	11	215	
Southampton, England	May 28, 1895	June 8, 1895	3,343	14.4	801	Temporary duty, European Station.
Copenhagen, Denmark	June 10, 1895	June 14, 1895	772.2	14.4	218	
Kiel, Germany	June 15, 1895	June 30, 1895	69.3	13	57	Opening of North Baltic Sea Canal.
Gravesend, England	July 2, 1895	July 15, 1895	685	15	137	
New York, N. Y	July 26, 1895	Aug. 7, 1895	3,089	14	882	
Newport, R. I	Aug. 8, 1895	Aug. 15, 1895	161	7	7	
Bar Harbor, Me	Aug. 17, 1895	Aug. 22, 1895	401	9	77	
Portland, Me	Aug. 26, 1895	Aug. 29, 1895	563		127	
Boston, Mass	Aug. 30, 1896	Sept. 5, 1895	97	8	31	
Fishers Island, Connecticut	Sept. 6, 1895	Sept. 15, 1895	282	9	68	
Tompkinsville, Staten Island	Sept. 16, 1895	Sept. 23, 1895	128	8	33	
Cape Henry, Va	Sept. 28, 1895		820		182	
Total distance sailed			17,618.5			
Columbia, Capt. G. W. SUMNER, commanding. Relieved by Capt. J. H. SANDS, Sept. 10, 1895.						North Atlantic Station.
Bluefields, Nicaragua	Oct. 4, 1894	Oct. 11, 1894	44			
Little Corn Island	Oct. 11, 1894	Oct. 21, 1894	44			
Kingston, Jamaica, West Indies	Oct. 24, 1894	Nov. 26, 1894	500			

Guantanamo Harbor, Cuba	Nov. 27, 1894	Dec. 8, 1894	185			
Kingston, Jamaica	Dec. 9, 1894		185			
Norfolk, Va	Jan. 11, 1895	Feb. 7, 1895	1,247			
New York, N. Y	Feb. 13, 1895	Mar. 23, 1895	260			
Kingston, Jamaica	Mar. 27, 1895		1,490			
Port au Prince, Haiti	Apr. 9, 1895	Apr. 11, 1895	295	11	70	
Colon, Colombia	Apr. 14, 1895	Apr. 20, 1895	810	11.3	150	
Key West, Fla	Apr. 24, 1895	Apr. 24, 1895	1,130	12.2	200	
New York, N. Y	Apr. 28, 1895	May 20, 1895	1,080	11.6	200	
Southampton, England	May 29, 1895	June 8, 1895	3,315	15.5	1,320	
Copenhagen, Denmark	June 10, 1895	June 14, 1895	700	15.2	310	
Kiel, Germany	June 15, 1895	June 30, 1895	160	13	90	Opening of Baltic Sea Canal.
Southampton, England	July 2, 1895	July 26, 1895	3,112	18	1,553	
New York, N. Y	Aug. 2, 1895	Sept. 23, 1895	832		211	
Lynnhaven Bay, Va	Sept. 28, 1895					
Total distance sailed			15,449			
Minneapolis, Capt. G. H. WADLEIGH, commanding						Commissioned December 13, 1894.
Navy-yard, League Island, Pa	Dec. 13, 1894	Jan. 11, 1895	232	10	44	
Hampton Roads, Va	Jan. 12, 1895	Jan. 14, 1895	12	8.5	2	
Navy-yard, Norfolk, Va	Jan. 14, 1895	Feb. 3, 1895	313.4	14.3	70	
Navy-yard, New York, N. Y	Feb. 8, 1895	Feb. 18, 1895	179.9	10.7	33	North Atlantic Station.
Newport, R. I	Feb. 19, 1895	Feb. 27, 1895	1,971	13.2	529	
Port of Spain, Trinidad	Mar. 5, 1895	Mar. 13, 1895	349	12.7	64	
La Guayra, Venezuela	Mar. 14, 1895	Mar. 18, 1895	530	11.4	97	
San Domingo, Haiti	Mar. 20, 1895	Mar. 23, 1895	439	10.9	81	
Kingston, Jamaica	Mar. 24, 1895	Apr. 8, 1895	283.6	10.3	63	
Port au Prince, Haiti	Apr. 9, 1895	Apr. 11, 1895	789.5	10.8	150	
Colon, Colombia	Apr. 14, 1895	Apr. 20, 1895	506.4	12.3	122	
Kingston, Jamaica	Apr. 22, 1895	Apr. 25, 1895	1,309.4	12.3	293	
Norfolk Navy-Yard		Aug. 5, 1895				
Hampton Roads, Va	Aug. 5, 1895	Aug. 9, 1895	9	6	2	
Tompkinsville, Staten Island	Aug. 10, 1895	Aug. 10, 1895	284	13	61	
Newport, R. I	Aug. 11, 1895	Aug. 15, 1895	163	12	37	
Bar Harbor, Me	Aug. 17, 1895	Aug. 22, 1895	418	7	88	
Cape Cod, Massachusetts	Aug. 24, 1895	Aug. 25, 1895	414	7	80	
Portland, Me	Aug. 26, 1895	Aug. 29, 1895	201	7	43	
Boston, Mass	Aug. 30, 1895	Sept. 5, 1895	114	7	23	
Fishers Island, Connecticut	Sept. 6, 1895	Sept. 15, 1895	318	9	64	
Tompkinsville, Staten Island	Sept. 16, 1895	Sept. 23, 1895	153	7	37	
Lynnhaven Bay, Va	Sept. 28, 1895		896	7	182	
Total distance sailed			9,885.2			
Maine, Capt. A. S. CROWNINSHIELD, commanding						Commissioned Sept. 17, 1895, at navy-yard, New York.
Texas, Capt. H. GLASS, commanding						Commissioned Aug. 15, 1895, at navy-yard, Norfolk.

The composition of the squadron on each station and the duties performed by each vessel—Continued.

FIRST RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Olympia, Capt J. J. READ, commanding						Commissioned Feb. 5, 1895.
Mare Island, Cal		Apr. 2, 1895		(*)	(*)	
Santa Barbara, Cal	Apr. 5, 1895		314	(*)	(*)	
San Diego, Cal	Apr. 21, 1895		165	(*)	(*)	
San Francisco, Cal	Apr. 28, 1895		456	(*)	(*)	
Mare Island, Cal	May 2, 1895	June 12, 1895	27	(*)	(*)	
Santa Cruz, Cal		June 13, 1895	102	(*)	(*)	
San Francisco, Cal	June 17, 1895		75	(*)	(*)	
Mare Island, Cal	June 19, 1895	June 27, 1895	27	(*)	(*)	
San Francisco, Cal	June 29, 1895		27	(*)	(*)	
Mare Island, Cal		Aug. 25, 1895	27	(*)	(*)	
Honolulu, Hawaiian Islands	Sept. 2, 1895		2,116	(*)	(*)	En route to Asiatic Station.

SECOND RATE.

Baltimore, Capt. B. F. DAY, commanding						Flagship, Asiatic Station.
Chemulpo, Korea	June 5, 1894	July 3, 1894	502			
Nagasaki, Japan	July 8, 1894	July 14, 1894	502			
Chemulpo, Korea	July 17, 1894	Sept. 30, 1894	51			
Anchorage off Prince Imperial Archipelago	Sept. 30, 1894	Oct. 1, 1894	439			
Nagasaki, Japan	Oct. 4, 1894	Oct. 23, 1894	488			
Chemulpo, Korea	Oct. 25, 1894	Nov. 4, 1894	255			
Chefoo, China	Nov. 5, 1894	Nov. 7, 1894	74			
Port Arthur, China	Nov. 7, 1894	Nov. 8, 1894	54			
Off Chefoo, China	Nov. 8, 1894	Nov. 10, 1894	22			Target practice
Chefoo, China	Nov. 10, 1894	Nov. 18, 1894	41			
Tung Chow Foo, China	Nov. 18, 1894	Nov. 19, 1894	41			
Chefoo, China	Nov. 19, 1894	Nov. 23, 1894	74			
Port Arthur, China	Nov. 24, 1894	Nov. 24, 1894	74			
Chefoo, China	Nov. 25, 1894	Nov. 27, 1894	563			
Nagasaki, Japan	Nov. 29, 1894	Dec. 2, 1894	578			
Chefoo, China	Dec. 4, 1894	Jan. 6, 1895	255			

Inland Sea, Japan	May 8, 1895	May 9, 1895	200	12.4	95	
Nagasaki, Japan	May 10, 1895	June 7, 1895	465	11.3	71	
Kobe, Japan	June 8, 1895	June 17, 1895	212	12.7	111	
Ouari Bay, Japan	June 18, 1895	June 21, 1895	154	9.4	52	
Gulf of Tokio, Japan	June 22, 1895	June 22, 1895	17	11	45	
Yokohama, Japan	do	June 24, 1895		10.5		
Yeddo Bay, Japan	June 24, 1895	June 25, 1895	54	10	34	
Yokohama, Japan	June 25, 1895					
Total distance sailed			6,413			
Chicago, Capt. A. T. MAHAN, commanding						Flagship, European Station
Antwerp, Belgium	June 15, 1894	Aug. 6, 1894				
Cowes, Isle of Wight	Aug. 7, 1894	Aug. 13, 1894	205			
Southampton, England	Aug. 13, 1894	Sept. 23, 1894	10			
Havre, France	Sept. 24, 1894	Sept. 29, 1894	103			
Southampton, England	Sept. 29, 1894	Oct. 20, 1894	103			
Lisbon, Portugal	Oct. 25, 1894	Nov. 5, 1894	868			
Tangier, Morocco	Nov. 6, 1894	Nov. 11, 1894	285			
Malaga, Spain	Nov. 12, 1894	Nov. 19, 1894	90			
Gibraltar, Spain	Nov. 19, 1894	Dec. 3, 1894	62			
Barcelona, Spain	Dec. 5, 1894	Dec. 14, 1894	487			
Marseilles, France	Dec. 15, 1894	Dec. 22, 1894	187			
Algiers, Algeria	Dec. 25, 1894	Feb. 21, 1895	390			
Gibraltar, Spain	Feb. 23, 1895	Feb. 28, 1895	416	9.7	99	
Funchal, Madeira	Mar. 3, 1895	Mar. 4, 1895	615	9	149	
Grass Bay, Bermuda	Mar. 16, 1895	Mar. 20, 1895	2,443	9	552	
New York, N. Y	Mar. 20, 1895					Put out of commission May 1, 1895.
Total distance sailed			6,264			
Philadelphia, Capt. C. S. COTTON, commanding						Flagship, Pacific Station.
Mare Island, Cal	Aug. 23, 1894	Dec. 17, 1894	26			
San Francisco, Cal	Dec. 18, 1894	Jan. 20, 1895	2,170	9.6	621	
Honolulu, Hawaiian Islands	Jan. 29, 1895	June 17, 1895	2,344	10.2	450	
San Francisco, Cal	Jan. 27, 1895					
Total distance sailed			4,540			
Monterey, Capt. LOUIS KEMPFF, commanding. Relieved by Capts. F. J. HIGGINSON, Feb. 13, 1895; T. F. KANE, Sept. 3, 1895.						Pacific Station.
New Whatcom, Wash	Sept. 29, 1894	Oct. 11, 1894				
Port Angeles, Wash	Oct. 11, 1894	Oct. 18, 1894	52			
New Whatcom, Wash	Oct. 18, 1894	Oct. 20, 1894	52			
Astoria, Oreg	Oct. 22, 1894	Oct. 24, 1894	265			
Portland, Oreg	Oct. 24, 1894	Nov. 13, 1894	85			
Astoria, Oreg	Nov. 13, 1894	Nov. 14, 1894	85			

*Not reported.

The composition of the squadron on each station and the duties performed by each vessel—Continued.

SECOND RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Seattle, Wash	Nov. 16, 1894	Dec. 6, 1894	271			
Tacoma, Wash	Dec. 6, 1894	Dec. 26, 1894	25			
Seattle, Wash	Dec. 26, 1894	Jan. 4, 1895	25			
Port Townsend, Wash	Jan. 4, 1895	Jan. 13, 1895	38	7	12.5	
Port Angeles, Wash	Jan. 13, 1895	Jan. 24, 1895	30	6.5	13	
New Whatcom, Wash	Jan. 24, 1895	Feb. 2, 1895	52	7.2	18	
San Francisco, Cal	Feb. 7, 1895	Feb. 8, 1895	733	7.3	146	
Mare Island, Cal	Feb. 8, 1895	Apr. 5, 1895	30	7.1	12	
San Diego, Cal	Apr. 8, 1895	Apr. 11, 1895	430	7.3	80	
Mazatlan, Mexico	Apr. 16, 1895	Apr. 18, 1895	904	7.7	136	
Acapulco, Mexico	Apr. 21, 1895	Apr. 28, 1895	587	7.1	95	
Panama, Colombia	May 6, 1895	May 11, 1895	1,473	7.3	190	
Callao, Peru	May 20, 1805	July 9, 1895	1,362	6.4	199	
Panama, Colombia	July 16, 1895	July 18, 1895	1,345	7	197	
Acapulco, Mexico	July 26, 1895	July 31, 1895	1,408	7	222	
San Diego, Cal	Aug. 8, 1895	Aug. 15, 1895	91	5	19	
Redondo Beach, Cal	Aug. 16, 1895	Aug. 19, 1895			21	
Port Los Angeles, Cal	Aug. 19, 1895	Aug. 22, 1895	259	6	52	
Monterey, Cal	Aug. 24, 1895	Aug. 29, 1895	81	7	141	
San Francisco, Cal	Aug. 30, 1895	Aug. 31, 1895			6	
Mare Island, Cal	Aug. 31, 1895					
Total distance sailed			9,570			
Newark, Capt. SILAS W. TERRY, commanding. Relieved by Capt. YATES STIRLING, May 24, 1895.						Flagship, South Atlantic Station.
Montevideo, Uruguay	June 20, 1894	July 9, 1894				
Rio de Janeiro, Brazil	July 13, 1894	July 26, 1894	1,014			
Cape Town, South Africa	Aug. 10, 1894	Sept. 25, 1894	3,297			
Walfish Bay, South Africa	Sept. 28, 1894	Oct. 1, 1894	754			
Jamestown, St. Helena Island	Oct. 6, 1894	Oct. 8, 1894	1,211			
Rio de Janeiro, Brazil	Oct. 17, 1894	Oct. 24, 1894	2,226			
Montevideo, Uruguay	Oct. 28, 1894	Dec. 11, 1894	1,048			
Maldonado, Uruguay	Dec. 11, 1894	Dec. 15, 1894	55			
Montevideo, Uruguay	Dec. 15, 1894	Mar. 19, 1895	57			
Maldonado, Uruguay	Mar. 20, 1895	Mar. 22, 1895	65	8	20	
Montevideo, Uruguay	Mar. 22, 1895		58	8.7	14	
Total distance sailed			9,785			

San Francisco, Capt. P. H. COOPER, commanding. Relieved by Capt. E. M. SHEPARD, Nov. 7, 1894.						Flagship, European Station.
Navy-yard, Brooklyn, N. Y.	July 29, 1894	Dec. 30, 1894	170			
Newport, R. I.	Dec. 31, 1894	Jan. 10, 1895	1,994	9.2	326	
Horta, Fayal	Jan. 19, 1895	Jan. 20, 1895	1,150	9.1	193	
Gibraltar	Jan. 25, 1895	Jan. 25, 1895	387	9.9	71	
Algiers, Algeria	Jan. 27, 1895	Feb. 21, 1895	1,451	10	213	
Alexandria, Egypt	Feb. 27, 1895	Mar. 8, 1895	266	10	46	
Japa, Syria	Mar. 9, 1895	Mar. 13, 1895	689	9.5	106	
Peiraus, Greece	Mar. 16, 1895	Mar. 20, 1895	408	9.3	71	
Corfu, Greece	Mar. 22, 1895	Mar. 28, 1895	407	9.9	66	
Palermo, Italy	Mar. 30, 1895	Apr. 7, 1895				
Phawrum, Greece	Apr. 10, 1895	Apr. 10, 1895	620	8.7	141	
Smyrna, Turkey	Apr. 11, 1895	Apr. 17, 1895	209	7.8		
Alexandretta, Syria	Apr. 20, 1895	Apr. 22, 1895	685	9.9	98	
Mersyn	Apr. 22, 1895	Apr. 25, 1895	80	9	18	
Naples, Italy	Apr. 30, 1895	May 8, 1895	1,187	10.5	180	
Algiers, Algeria	May 11, 1895	May 17, 1895	585	9.8	83	
Malaga, Spain	May 19, 1895	May 20, 1895	387	8.8	79	
Gibraltar, Spain	May 21, 1895	May 21, 1895	65	7.3	10	
Southampton, England	May 27, 1895	June 7, 1895	1,187	9.7	203	
Copenhagen, Denmark	June 10, 1895	June 14, 1895	801	10.8	124	
Kiel, Germany	June 15, 1895	July 2, 1895	194	12	71	
Total distance sailed			12,922			
Charleston, Capt. G. W. COFFIN, commanding						Asiatic Station.
San Francisco, Cal	July 8, 1894	July 8, 1894	1,816			
Mare Island, Cal	do	Aug. 26, 1894	23			
Honolulu, Hawaiian Islands	Sept. 4, 1894	Sept. 13, 1894	2,301			
Yokohama, Japan	Oct. 2, 1894	Oct. 16, 1894	3,520			
Nagasaki, Japan	Oct. 19, 1894	Oct. 29, 1894				
Chemulpo, Korea	Oct. 31, 1894	Jan. 8, 1895				
Nagasaki, Japan	Jan. 10, 1895	Jan. 21, 1895	523	10	121	
Chemulpo, Korea	Jan. 24, 1895	Jan. 25, 1895	654	7	93	
Chefoo, China	Jan. 26, 1895	Feb. 7, 1895	309	12	71	
San San Saddle	Feb. 7, 1895	do	94	12	30	
Chefoo, China	Feb. 8, 1895	Feb. 16, 1895	98	12	26	
Off Three Peaked Point	Feb. 16, 1895	Feb. 18, 1895	40	10	18	
Wei Hai Wei	Feb. 19, 1895	Feb. 23, 1895	139	4	45	
Chefoo, China	Feb. 23, 1895	Mar. 18, 1895	38	11	17	
Port Arthur	Mar. 19, 1895	Mar. 20, 1895	74	4	28	
Tai Lien Wan	Mar. 20, 1895	Mar. 23, 1895	38	8	14	
Chefoo, China	Mar. 23, 1895	Apr. 4, 1895	87	11	25	
Mouth of the Lao, China	Apr. 5, 1895	Apr. 10, 1895	197	11	62	
Chefoo, China	Apr. 11, 1895	May 3, 1895	227	11	69	
Nagasaki, Japan	May 5, 1895		565	10	120	
Total distance sailed			10,743			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

SECOND RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Miantonomoh, Capt. T. F. KANE, commanding						North Atlantic Station.
Navy-yard, New York	Sept. 23, 1894	Oct. 20, 1894	45			
Navy-yard, League Island, Pa	Oct. 21, 1894		226			Put out of commission Nov. 20, 1894.
Total distance sailed			271			
Amphitrite, Capt. W. C. WISE, commanding						Commissioned Apr. 23, 1895. North Atlantic Station.
Norfolk, Va		May 9, 1895				
Lynnhaven, Va	May 9, 1895	May 10, 1895	18	6	15	
Hampton Roads, Va	May 10, 1895	May 13, 1895	32	3	15	
Savannah, Ga	May 17, 1895	May 23, 1895	505	5	78	
Port Royal, S. C	May 23, 1895	June 8, 1895	32	3	18	
Hampton Roads, Va	June 12, 1895	June 25, 1895	460	4	109	
Chesapeake Bay	June 25, 1895	do	22	7	7	
Hampton Roads, Va	do	July 11, 1895				
Cape Henry, Va	July 11, 1895	July 12, 1895	30		10	
Hampton Roads, Va	July 12, 1895	July 16, 1895	30		10	
Lamberts Point	July 16, 1895	July 17, 1895	6		2	
Hampton Roads, Va	July 17, 1895	July 18, 1895	6		2	
Brunswick, Ga	July 23, 1895	July 28, 1895	512	5	125	
Charleston, S. C	July 29, 1895	Aug. 1, 1895	128	4	25	
Southport, N. C	Aug. 2, 1895	Aug. 10, 1895	110	5	32	
Port Royal, S. C	Aug. 12, 1895	Aug. 20, 1895	175	5	40	
Norfolk, Va	Aug. 23, 1895		421	7	75	
Total distance sailed			2,487			
Cincinnati, Capt. H. GLASS, commanding. Relieved by Capt. M. L. JOHNSON Aug. 1, 1895.						Commissioned June 16, 1894. North Atlantic Station.
Glen Cove, Long Island	Aug. 24, 1894	Aug. 25, 1894	19			
Greenport, Long Island	Aug. 27, 1894	Sept. 6, 1894	75			
Glen Cove, Long Island	Sept. 7, 1894	Sept. 7, 1894	75			
Navy-yard, New York	do		19			
Tarrytown, N. Y	Oct. 18, 1894	Oct. 20, 1894	26			
New York, N. Y	Oct. 20, 1894	do	26			
Newport, R. I	Oct. 21, 1894	Oct. 29, 1894	139			
New London, Conn	Oct. 29, 1894	Nov. 11, 1894	45			
Hortons Point, Long Island	Nov. 11, 1894	Nov. 12, 1894	25			
New London, Conn	Nov. 12, 1894	Nov. 13, 1894	25			

New York, N. Y	Nov. 14, 1894	Nov. 16, 1894	101	.....	.....	
Do	Nov. 16, 1894	.....	86	.....	.....	
Tompkinsville, N. Y	Jan. 19, 1895	Jan. 20, 1895	7	7	15	
Hampton Roads, Va	Jan. 21, 1895	Jan. 30, 1895	250	11	51	
St. Thomas, Dutch West Indies	Feb. 5, 1895	Feb. 9, 1895	1,150	10	242	
Santa Cruz, Dutch West Indies	Feb. 9, 1895	Feb. 11, 1895	38	10	14	
St. Pierre, French West Indies	Feb. 12, 1895	Feb. 14, 1895	300	10	52	
St. Lucia, British West Indies	Feb. 14, 1895	Feb. 19, 1895	50	9	13	
Bridgetown, Barbados	Feb. 20, 1895	Feb. 28, 1895	120	7	21	
Port of Spain, Trinidad	Mar. 1, 1895	Mar. 13, 1895	220	9	31	
La Guayra, Venezuela	Mar. 14, 1895	Mar. 18, 1895	370	11	59	
Curaçoa, Dutch West Indies	Mar. 19, 1895	Mar. 19, 1895	150	10	23	
Santo Domingo, Dutch West Indies	Mar. 20 1895	Mar. 23, 1895	440	11	63	
Kingston, Jamaica	Mar. 24, 1895	Mar. 25, 1895	450	10	67	
Port Antonio	Apr. 8, 1895	Apr. 12, 1895	86	11	15	
Colon, United States of Colombia	Apr. 14, 1895	Apr. 20, 1895	595	10	91	
Key West, Fla	Apr. 24, 1895	May 8, 1895	1,074	10	179	
Cape Henry, Va	May 11, 1895	May 11, 1895	875	10	189	
Tompkinsville, N. Y	May 12, 1895	May 13, 1895	249	10	.....	
New York, N. Y	May 13, 1895	May 30, 1895	7	7	5	
Riverside Park, N. Y	May 30, 1895	.....do	11	10	.....	
Navy-yard, New York	.....do	June 17, 1895	11	10	6	
Spuyten Duyvil Creek	June 17, 1895	.....do	14	10	.....	
New London, Conn	June 18, 1895	June 20, 1895	109	10	32	
New York, N. Y	June 21, 1895	Aug. 5, 1895	95	10	19	
Sandy Hook, N. J	Aug. 5, 1895	Aug. 7, 1895	17.5	10	7	
Newport, R. I	Aug. 8, 1895	Aug. 12, 1895	148	7.8	46	
Key West, Fla	Aug. 17, 1895	Sept. 28, 1895	1,270	10.6	272	
Cedar Keys, Fla	Sept. 29, 1895	Sept. 30, 1895	312	9	71	
Tampa, Fla	Sept. 30, 1895	.....	67	9	23	To assist civil authorities in preventing violation of neutrality laws.
Total distance sailed	.....	.....	9,096.5	.....	.....	
Raleigh, Capt. M. MILLER, commanding	.....	.....	.....	.....	.....	Commissioned Apr. 17, 1894. North Atlantic Station.
Newport, R. I	Jan. 23, 1895	Jan. 25, 1895	349	10	67	
Hampton Roads, Va	Jan. 28, 1895	Jan. 30, 1895	377	7	81	
San Juan de Porto Rico	Feb. 5, 1895	Feb. 5, 1895	1,244	9	257	
St. Thomas	.....do	Feb. 9, 1895	50	7	15	
Santa Cruz	Feb. 9, 1895	Feb. 11, 1895	33	10	6	
Martinique, St. Pierre	Feb. 12, 1895	Feb. 14, 1895	292	10	59	
St. Lucia	Feb. 14, 1895	Feb. 19, 1895	37	9	6	
Barbados, Bridgetown	Feb. 20, 1895	Mar. 1, 1895	128	8	25	
Trinidad, Port of Spain	Mar. 1, 1895	Mar. 7, 1895	180	9	38	
Colon	Mar. 11, 1895	Mar. 15, 1895	1,140	11	190	
Cartagena	Mar. 17, 1895	Mar. 24, 1895	273	7	70	
Colon	Mar. 25, 1895	Apr. 20, 1895	280	9	58	
Kingston, Jamaica	Apr. 24, 1895	Apr. 27, 1895	743	8	177	
Key West, Fla	May 1, 1895	May 10, 1895	833	9	168	
Tybee Roads, Ga	May 13, 1895	May 25, 1895	429	8	90	
Hampton Roads, Va	May 27, 1895	June 8, 1895	515	9	88	
New York, N. Y	June 9, 1895	June 13, 1895	346	9	59	

The composition of the squadron on each station and the duties performed by each vessel—Continued.

SECOND RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Key West, Fla	June 19, 1895	June 24, 1895	1,288	10	258	
Tampa Bay, Fla	June 27, 1895	July 1, 1895	437	7	88	
Key West, Fla	July 3, 1895	July 18, 1895	312	8	63	
Boston, Mass	July 24, 1895	Aug. 1, 1895	1,272	8	269	
New York, N. Y	Aug. 3, 1895	Aug. 9, 1895	367	9	84	
Newport, R. I	Aug. 10, 1895	Aug. 15, 1895	143	9	33	
Bar Harbor, Me	Aug. 17, 1895	Aug. 22, 1895	463	9	97	
Cape Cod Bay, Mass	Aug. 24, 1895	Aug. 25, 1895	370	6	67	
Portland, Me	Aug. 26, 1895	Aug. 29, 1895	198	7	38	
Boston, Mass	Aug. 30, 1895	Sept. 5, 1895	109	8	27	
Fishers Island	Sept. 6, 1895	Sept. 15, 1895	306	9	58	
Tompkinsville, Staten Island	Sept. 16, 1895	Sept. 23, 1895	154	7	28	
Lynnhaven Roads, Va	Sept. 28, 1895		843	7	164	
Total distance sailed			12,411			
Atlanta, Capt. J. R. BARTLETT, commanding. Relieved by Capt. B. J. CROMWELL, Dec. 22, 1894.						North Atlantic Station.
Norfolk Navy-Yard	Sept. 7, 1894	Dec. 27, 1894	285			
Hampton Roads, Va	Dec. 27, 1894	Dec. 31, 1894	13			
Key West, Fla	Jan. 5, 1895	Jan. 10, 1895		8	183	
Truxillo, Honduras	Jan. 13, 1895	Jan. 15, 1895	650	8	125	
Cliba, Honduras	Jan. 15, 1895	Jan. 16, 1895	51	9	17	
Puerto Cortez, Honduras	Jan. 16, 1895	Jan. 18, 1895	72	9	18	
Bluefields, Nicaragua	Jan. 23, 1895	Jan. 23, 1895	523	8	113	
Colon, Colombia	Jan. 25, 1895	Mar. 6, 1895	275	7	42	
Bocas del Toro, Colombia	Mar. 7, 1895	Mar. 10, 1895	128	7	39	
Colon	Mar. 11, 1895	Mar. 27, 1895	128	6	43	
Cartagena	Mar. 29, 1895		270	6	82	
Colon, Colombia	Apr. 9, 1895	Apr. 20, 1895	270		62	
Key West, Fla	Apr. 26, 1895	May 10, 1895	1,055	7	235	
Savannah, Ga	May 13, 1895	May 25, 1895	570	7	93	
Hampton Roads, Va	June 2, 1895	June 6, 1895	512	8	103	
New London, Conn	June 13, 1895	June 14, 1895	386	7	89	
Port Morris, N. Y	June 16, 1895	June 17, 1895	90	7	25	
New London, Conn	June 18, 1895	June 21, 1895	90	7	24	
Navy yard, New York	June 22, 1895	June 27, 1895	95	7	31	
Total distance sailed			5,463			

Boston						
Lancaster						Commissioned Sept. 12, 1895, at New York Navy-Yard.
THIRD RATE.						
Detroit, Commander W. H. BROWNSON, commanding. Relieved by Commander J. S. NEWELL, Aug. 15, 1894.						Assigned to Asiatic Station Oct. 1, 1894.
Norfolk Navy-Yard	Apr. 26, 1894	Oct. 14, 1894	12			
Hampton Roads, Va	Oct. 14, 1894	Oct. 16, 1894	350			
Newport, R. I	Oct. 18, 1894	Oct. 28, 1894	2,209			
Ponta Delgada, St. Michaels, Azores	Nov. 7, 1894	Nov. 10, 1894	946			
Cadiz, Spain	Nov. 14, 1894	Dec. 4, 1894	87			
Gibraltar, Spain	Dec. 4, 1894	Dec. 8, 1894	1,008			
Naples, Italy	Dec. 13, 1894	Dec. 29, 1894	1,117			
Port Said, Egypt	Jan. 3, 1895	Jan. 6, 1895	33			
Ismailia, Egypt	Jan. 6, 1895	Jan. 7, 1895	57			
Suez, Egypt	Jan. 7, 1895	Jan. 7, 1895	1,352			
Aden, Arabia	Jan. 13, 1895	Jan. 17, 1895	2,111			
Colombo, Ceylon	Jan. 26, 1895	Feb. 1, 1895	1,625			
Singapore, Straits Settlements	Feb. 8, 1895	Feb. 12, 1895	1,442			
Off Samoan Islands	Feb. 18, 1895	Feb. 19, 1895	16			
Hongkong, China	Feb. 19, 1895	Mar. 9, 1895	1,082			
Nagasaki, Japan	Mar. 14, 1895	Mar. 20, 1895	442			
At sea	Mar. 22, 1895	Mar. 23, 1895	60			
Chemulpo, Korea	Mar. 23, 1895	June 21, 1895	635	8.1	94	
Shanghai, China	June 25, 1895					
Total distance sailed			14,491			
Montgomery, Commander C. H. DAVIS, commanding						North Atlantic Station.
Baltimore, Md	Oct. 1, 1894	Oct. 4, 1894	111			
Yorktown, Va	Oct. 5, 1894	Oct. 7, 1894	46			
Norfolk, Va	Oct. 7, 1894	Nov. 4, 1894	272			
New York, N. Y	Nov. 5, 1894	Nov. 6, 1894	130			
Newport, R. I	Nov. 7, 1894	Nov. 10, 1894	1,831			
Mobile, Ala	Nov. 19, 1894	Dec. 8, 1894	653			
Do	Dec. 10, 1894	Dec. 18, 1894	682			Making coal tests
Do	Dec. 22, 1894	Jan. 2, 1895				
Fort Morgan, Ala	Jan. 2, 1895	Jan. 3, 1895				
Pensacola, Fla	Jan. 5, 1895	Jan. 11, 1895	462	10	103	
Mobile, Ala	Jan. 13, 1895	Jan. 26, 1895	546	13	88	
Do	Jan. 28, 1895	Feb. 3, 1895	500	11	100	
Do	Feb. 5, 1895	Feb. 17, 1895	537	13	97	
Do	Feb. 20, 1895	Mar. 3, 1895	440	11	95	
Truxillo, Honduras	Mar. 7, 1895	Mar. 13, 1895	873	8	125	

The composition of the squadron on each station and the duties performed by each vessel—Continued.

THIRD RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Brewers Lagoon, Honduras	Mar. 14, 1895	Mar. 17, 1895	79	12	24	To investigate the Renton murder.
Mobile, Ala	Mar. 21, 1895	Apr. 4, 1895	909	10	118	
Do	Apr. 6, 1895	Apr. 11, 1895	560	13	87	
Do	Apr. 13, 1895	Apr. 21, 1895	461	12	104	
Do	Apr. 23, 1895	May 7, 1895	567	13	93	
False Cape, Nicaragua	May 11, 1895	May 12, 1895	1,104	11	122	Nicaraguan Canal Commission.
Grey Town, Nicaragua	May 13, 1895	June 15, 1895	322	11	54	
Colon, Colombia	June 16, 1895	June 21, 1895	231	8	41	
Grey Town, Nicaragua	June 22, 1895	June 24, 1895	237	9	41	
Port Limon, Costa Rica	June 24, 1895	June 30, 1895	67	11	18	
Total distance sailed			11,720			
Marblehead, Commander CHARLES O'NEIL, commanding						North Atlantic Station.
Bluefields, Nicaragua	Sept. 25, 1894	Oct. 11, 1894				
Grey Town, Nicaragua	Oct. 12, 1894	Oct. 12, 1894	65			
Bluefields, Nicaragua	Oct. 13, 1894	Oct. 17, 1894	65			
Little Corn Island	Oct. 17, 1894	Oct. 25, 1894	45			
Bluefields, Nicaragua	Oct. 25, 1894	Nov. 6, 1894	45			
Cartagena, Colombia	Nov. 9, 1894	Nov. 23, 1894	510			
Port Royal, Jamaica	Nov. 25, 1894	Nov. 29, 1894	470			
Hampton Roads, Va	Dec. 6, 1864	Dec. 7, 1894	1,246			
Norfolk, Va	Dec. 7, 1894	Mar. 4, 1895	12			
Newport, R. I	Mar. 6, 1895	Mar. 11, 1895	377	8	44	
Halifax, Nova Scotia	Mar. 14, 1895	Mar. 15, 1895	550	9	60	
Ponta Delgada, Azores	Mar. 23, 1895	Mar. 27, 1895	1,860	10	209	
Gibraltar, Spain	Mar. 31, 1895	Apr. 4, 1895	980	10	100	European Station.
Tangier, Morocco	Apr. 4, 1895	Apr. 6, 1895	35	10	4	
Gibraltar, Spain	Apr. 6, 1895	do	35	10	4	
Beyroot, Syria	Apr. 14, 1895	Apr. 21, 1895	2,065	11	202	
Alexandretta, Asia Minor	Apr. 22, 1895	Apr. 23, 1895	190	10	23	
Mersyn, Asia Minor	Apr. 23, 1895	Apr. 24, 1895	80	10	12	
Smyrna, Turkey	Apr. 27, 1895	Apr. 29, 1895	650	10	68	
Phalerum Bay, Greece	Apr. 30, 1895	May 3, 1895	210	11	17	
Naples, Italy	May 6, 1895	May 12, 1895	703	9	50	
Algiers, Algeria	May 15, 1895	May 17, 1895	582	8	41	
Gibraltar, Spain	May 19, 1895	May 21, 1895	424	8	36	
Needles, Isle of Wight	May 26, 1895	May 27, 1895	1,167	10	99	
Southampton, England	May 27, 1895	June 7, 1895	20	10	2	
Hamburg, Germany	June 9, 1895	June 20, 1895	528	9	61	

Baltic Canal to Kiel						
Cronstadt, Russia	June 20, 1895	June 27, 1895	115	7	18	Opening Baltic Sea Canal.
	June 30, 1895		781	11	67	
Total distance sailed			13,770			
Marion, Commander D. W. MULLAN, commanding						Commissioned Sept. 16, 1895. Pacific Station.
Mohican, Commander C. E. CLARK, Commanding. Relieved by Commander D. W. MULLAN, Dec. 1, 1895.						Pacific Station.
Unalaska, Alaska	June 30, 1894	July 13, 1894				
St. George Island, Alaska	July 14, 1894	July 14, 1894	205			
St. Paul Island, Alaska	do	July 17, 1894	41			
St. George Island, Alaska	July 17, 1894	July 21, 1894	59			Assigned to temporary duty with Bering Sea fleet.
Unalaska, Alaska	July 22, 1894	Aug. 6, 1894	268			
Do	Aug. 9, 1894	Aug. 23, 1894	630			
St. George, Alaska	Aug. 26, 1894	Aug. 26, 1894	481			
St. Paul Island, Alaska	do	do	55			
Unalaska, Alaska	Aug. 30, 1994	Sept. 7, 1894	623			
Do	Sept. 11, 1894	Sept. 26, 1894	645			
At sea	Oct. 1, 1894		780			
San Francisco, Cal	Oct. 8, 1894	Oct. 9, 1894	1,168			
Mare Island, Cal	Oct. 9, 1894		28			
Port Angeles, Wash	Jan. 15, 1895	Jan. 17, 1895	876	7	82	
Seattle, Wash	Jan. 17, 1895	Jan. 25, 1895	70	8		
Do	Jan. 26, 1895	Jan. 30, 1895	147	6		
New Whatcom, Wash	Jan. 30, 1895	Feb. 1, 1895	74	8		
Seattle, Wash	Feb. 1, 1895	Feb. 4, 1895	85	8		
Tacoma, Wash	Feb. 4, 1895	Feb. 8, 1895	95	10		
Seattle, Wash	Feb. 9, 1895	Feb. 13, 1895	160	6		
Tacoma, Wash	Feb. 14, 1895	Feb. 15, 1895	152	8		
Do	Feb. 15, 1895	Feb. 20, 1895	98	10		
Do	Feb. 21, 1895	Feb. 25, 1895	159	6		
Port Orchard, Wash	Feb. 26, 1895	Feb. 28, 1895	152	8		
Seattle, Wash	Feb. 28, 1895	Mar. 6, 1895	14	8		
New Whatcom, Wash	Mar. 6, 1895	Mar 11, 1895	92	10		
Do	Mar. 11, 1895	Mar. 12, 1895	17	8		
Do	Mar. 13, 1895	Mar. 14, 1895	187	6		
Seattle, Wash	Mar. 15, 1895	Mar. 18, 1895	146	8		
New Whatcom, Wash	Mar. 18, 1895	Mar. 30, 1895	90	10		
Seattle, Wash		Apr. 8, 1895				
Port Townsend, Wash	Apr. 9, 1895	Apr. 11, 1895	139			
Seattle, Wash	Apr. 12, 1895	Apr. 18, 1895	108			
Tacoma, Wash	Apr. 19, 1895	Apr. 24, 1895	162			
Olympia, Wash	Apr. 24, 1895	Apr. 28, 1895	35			
Seattle, Wash	Apr. 29, 1895	May 2, 1895	111			
Tacoma, Wash	May 2, 1895	May 21, 1895	72			
Blaine, Wash	May 21, 1895	June 1, 1895	109			
Seattle, Wash	June 1, 1895	June 11, 1895	96			
Vancouver, British Columbia	June 12, 1895	June 24, 1895	156			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

THIRD RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Seattle, Wash	June 25, 1895	June 27, 1895	132			
Port Angeles, Wash	June 27, 1895	July 1, 1895	79			
Everette, Wash	July 2, 1895	July 10, 1895	64			
Seattle, Wash	July 10, 1895	July 16, 1895	27			
Victoria, British Columbia	July 16, 1895	July 18, 1895	89			
Seattle, Wash	July 18, 1895	July 24, 1895	78			
Do	July 24, 1895	July 27, 1895	69			
Tacoma, Wash	July 27, 1895	July 31, 1895	83			
Seattle, Wash	July 31, 1895	Aug. 1, 1895	70			
Do	Aug. 1, 1895	Aug. 27, 1895	26			
San Francisco, Cal	Sept. 1, 1895	Sept. 3, 1895	823			Put out of commission Sept. 16, 1895.
Mare Island, Cal	Sept. 3, 1895					
Total distance sailed			10,226			
Bennington, Commander C. M. THOMAS, commanding						Pacific Station.
Navy-yard, Mare Island, Cal	Aug. 23, 1894	Dec. 27, 1894				
San Francisco, Cal	Dec. 27, 1894	Dec. 28, 1894	25			
At sea, lat. 47° 27′ N., long. 126° 21′ W	Dec. 31, 1894	Jan. 1, 1895	670			Cruising in search of derelicts.
San Francisco, Cal	Jan. 10, 1895	Jan. 11, 1895	1,570	6	165	
Navy yard, Mare Island, Cal	Jan. 11, 1895	Jan. 31, 1895	27	7	3	
Acapulco, Mexico	Feb. 8, 1895	Mar. 6, 1895	1,887	10	212	
Magdalena Bay, Lower California, Mexico	Mar. 10, 1895	Mar. 11, 1895	870	9	104	
Navy-yard, Mare Island, Cal	Mar. 16, 1895	May 28, 1895		9	149	
Honolulu, Hawaiian Islands	June 5, 1895		2,104	11	222	To protect American interests.
Total distance sailed			7,133			
Concord, Commander C. F. GOODRICH, commanding. Relieved by Commander J. E. CRAIG, December 24, 1894.						Asiatic Station.
At sea	June 30, 1894	June 30, 1894				
Unalaska, Alaska	July 1, 1894	July 1, 1894	137			
McAdoo Bay, Unmak Island	July 4, 1894	July 6, 1894				Assigned to temporary duty with Bering Sea Fleet.
Unalaska, Alaska	July 10, 1894	July 13, 1894	1,260			
Nickolski, Unmak Island	July 16, 1894	July 17, 1894				
Bay of Waterfalls, Adakli Island	July 20, 1894	July 28, 1894	1,229			
Unalaska, Alaska	July 29, 1894	Aug. 1, 1894				

Yokohama, Japan	Sept. 3, 1894	Sept. 10, 1894	2,729			
Nagasaki, Japan	Sept. 14, 1894	Sept. 14, 1894	764			
Chemulpo, Korea	Sept. 23, 1894	Sept. 23, 1894	436			
Do	.....do.....	Oct. 29, 1894				Asiatic Station.
Shanghai, China	Oct. 31, 1894	Nov. 4, 1894	500			
Chinkiang, China	Nov. 5, 1894	Nov. 6, 1894	161			
Wuhu, China	Nov. 6, 1894	Nov. 7, 1894	100			
Nanking, China	Nov. 7, 1894	Nov. 8, 1894	61			
Chinkiang, China	Nov. 8, 1894	Dec. 8, 1894	39			
Wuhu, China	Dec. 8, 1894	Dec. 29, 1894	100			
Nanking, China	Dec. 29, 1894	Dec. 30, 1894	61			
Chinkiang, China	Dec. 30, 1894	Jan. 1, 1895	39			
Shanghai, China	Jan. 2, 1895	Jan. 22, 1895	167	9	19	
Ningpo, China	Jan. 24, 1895	Jan. 28, 1895	154	7	23	
Wusung, China	Jan. 29, 1895	Jan. 30, 1895	141	10	20	
Chinkiang, China	Feb. 1, 1895	Mar. 19, 1895	176	10	26	
Shanghai, China	Mar. 20, 1895	Apr. 17, 1895	168	9	19	
Nagasaki, Japan	Apr. 20, 1895	Apr. 27, 1895	505	8	50	
Tamsui Harbor, Formosa	Apr. 29, 1895	May 3, 1895	714	12	80	
Amoy, China	May 4, 1895	May 8, 1895	199	9	17	
Chefoo, China	May 13, 1895	May 19, 1895	1,032	8	82	
Nagasaki, Japan	May 21, 1895	June 10, 1895	613	12	77	
Chemulpo, Korea	June 16, 1895	.....	502	8	57	
Total distance sailed			13,191			
Yorktown, Commander W. M. FOLGER, commanding						Asiatic Station.
Mare Island, Cal	Sept. 24, 1894	Nov. 10, 1894				
Honolulu, Hawaiian Islands	Nov. 18, 1894	Nov. 23, 1894	2,115			
Yokohama, Japan	Dec. 8, 1894	Dec. 19, 1894	3,474			
Nagasaki, Japan	Dec. 22, 1894	Dec. 24, 1894	731			
Chefoo, China	Dec. 28, 1894	Dec. 30, 1894	754			
Teng Chow Foo, China	Dec. 30, 1894	Jan. 1, 1895	46			
Chefoo, China	Jan. 1, 1895	Jan. 6, 1895				
Latitude 30° 49′ N., longitude 12° 26′ E.	Jan. 7, 1895	Jan. 8, 1895	18	6		
Chefoo, China	Jan. 9, 1895	Jan. 10, 1895	174	10		
Port Arthur, China	Jan. 10, 1895	Jan. 12, 1895	79	10		
Talien Wan	Jan. 12, 1895	Jan. 13, 1895	32	5		
Chefoo, China	Jan. 14, 1895	Jan. 20, 1895	98	6		
Tung Chan Foo	Jan. 20, 1895	Jan. 21, 1895	61	9		
Chefoo, China	Jan. 21, 1895	Jan. 30, 1895	41	11		
Five miles west of Wei Hai Wei	Jan. 30, 1895	Jan. 31, 1895	36	8		
Chefoo, China	Feb. 2, 1895	Feb. 5, 1895	247	4		
Yung Ching Bay	Feb. 5, 1895	Feb. 6, 1895	70	9		
Chefoo, China	Feb. 6, 1895	Feb. 12, 1895	89	8		
Lower Point	Feb. 13, 1895	Feb. 14, 1895	317	10		
Au Lung Wei	Feb. 14, 1895	.....do.....	17	4		
Kyan Chan Bay	Feb. 16, 1895	Feb. 19, 1895	221	5		
Yung Ching Bay	Feb. 20, 1895	Feb. 21, 1895	230	8		
Chefoo, China	Feb. 21, 1895	Mar. 6, 1895	77	9		
Yung Ching Bay	Mar. 6, 1895	Mar. 8, 1895	79	8		

The composition of the squadron on each station and the duties performed by each vessel—Continued.

THIRD RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Chemulpo, Korea	Mar. 9, 1895	Mar. 28, 1895	210	8	.....	
Chefoo, China	Mar. 29, 1895	Mar. 30, 1895	289	9	.....	
Nagasaki, Japan	Apr. 2, 1895	Apr. 14, 1895	619	9	59	
Shanghai, China	Apr. 17, 1895	May 2, 1895	498	11	36	
Chinkiang, China	May 3, 1895	May 7, 1895	167	9	13	
Chefoo, China	May 10, 1895	May 19, 1895	671	10	62	
Nagasaki, Japan	May 21, 1895	.....	595	11	55	
Total distance sailed	.....	.....	12,055	.....	.....	
Dolphin, Lieut. B. H. BUCKINGHAM, commanding	.....	.....	.....	.....	.....	Special service.
New London, Conn	Sept. 29, 1894	Oct. 17, 1894	.....	.....	.....	
New York Navy-Yard	Oct. 17, 1894	Oct. 18, 1894	100	.....	.....	
Tarrytown	Oct. 18, 1894	Oct. 20, 1894	26	.....	.....	
New York Navy-Yard	Oct. 20, 1894	Nov. 7, 1894	26	.....	.....	
New London, Conn	Nov. 7, 1894	Nov. 11, 1894	100	.....	.....	
Buoy 8, Ericsson speed course	Nov. 11, 1894	Nov. 12, 1894	45	.....	.....	
Buoy 9, Ericsson speed course	Nov. 12, 1894	.....do.....	3	.....	.....	
New London, Conn	.....do.....	Nov. 14, 1894	50	.....	.....	
Oregon Hill Beacon	Nov. 14, 1894	.....do.....	30	.....	.....	Speed trial of the Ericsson.
New London, Conn	.....do.....	Nov. 17, 1894	30	.....	.....	
Buoy 9, Ericsson speed course	Nov. 17, 1894	.....do.....	50	.....	.....	
Stratford Point, Conn., via Buoy 8	.....do.....	Nov. 19, 1894	12	.....	.....	
Buoy 9, via Buoy 8	Nov. 19, 1894	.....do.....	12	.....	.....	
Stratford Point, via Buoy 8	.....do.....	Nov. 20, 1894	12	.....	.....	
Buoy 9, via Buoy 8	Nov. 20, 1894	.....do.....	12	.....	.....	
Bridgeport, Conn	.....do.....	Nov. 21, 1894	15	.....	.....	
Buoy 9, via Buoy 8	Nov. 21, 1894	.....do.....	15	.....	.....	
New London, Conn	.....do.....	Nov. 22, 1894	50	.....	.....	
Buoy 9, Ericsson speed course	Nov. 22, 1894	.....do.....	50	.....	.....	
New London, Conn	.....do.....	Dec. 1, 1894	50	.....	.....	
New York Navy-Yard	Dec. 2, 1894	Dec. 6, 1894	100	.....	.....	
Washington, D. C	Dec. 8, 1894	.....	431	.....	.....	
Navy-yard, Norfolk, Va	May 14, 1895	June 1, 1895	171	11	18	
Navy-yard, Washington, D. C	June 2, 1895	June 4, 1895	171	12	15	
Annapolis, Md	June 5, 1895	June 7, 1895	153	12	19	
Navy-yard, Washington, D. C	June 8, 1895	June 16, 1895	153	12	19	
Baltimore, Md	June 17, 1895	June 18, 1895	178	12	15	
Hampton Roads, Va	June 19, 1895	June 25, 1895	145	12	13	
Philadelphia, Pa	June 26, 1895	June 27, 1895	235	12	17	
Navy-yard, New York, N. Y	June 28, 1895	.....	235	12	21	

New Haven, Conn	July 2, 1895	July 3, 1895	60	11.5	5	
New London, Conn	July 3, 1895	July 5, 1895	45		4	
Newport, R. I	July 5, 1895	July 7, 1895	45		4	
Boston, Mass	July 8, 1895	July 10, 1895	15		12	
Gloucester, Mass	July 10, 1895	July 20, 1895	26		3	
Washington, D. C	July 22, 1895	July 26, 1895	641		49	
Newport News, Va	July 27, 1895	July 27, 1895	170		13	
Norfolk, Va	do	July 28, 1895	11			
New York, N. Y	July 29, 1895	July 30, 1895	285		23	
New London, Conn	July 30, 1895	July 31, 1895	100		10	
Newport, R. I	July 31, 1895	Aug. 2, 1895	45		4	
Cruising outside harbor and return	Aug. 2, 1895	do				
Newport, R. I	do	Aug. 15, 1895	60		5	
Bar Harbor, Me	Aug. 16, 1895	Aug. 22, 1895	278		21	
Soninto, Me	Aug. 22, 1895	do	5		8	
Bar Harbor, Me	do	Aug. 26, 1895	5			
Portland, Me	Aug. 27, 1895	Aug. 27, 1895	115		12	
Boston, Mass	do	Aug. 28, 1895	90		9	
Falmouth, Mass	Aug. 29, 1895	Aug. 29, 1895	120		8	
New York, N. Y	Aug. 30, 1895	Sept. 17, 1895	167		13	
Gloucester, Mass	Sept. 18, 1895	Sept. 24, 1895	285		21	
Kennebunk Port, Me	Sept. 24, 1895	Sept. 25, 1895	52		7	
Cruising on trial course	Sept. 25, 1895	do				
Kennebunk Port, Me	do	Sept. 26, 1895	30		4	
Gloucester, Mass	Sept. 26, 1895		52		7	
Total distance sailed			5,312			
Alliance, Commander T. A. LYONS, commanding. Relieved by Commander JOHN MCGOWAN, Jan. 19, 1895.						**Recommissioned January 19, 1895.**
Norfolk, Va		Mar. 25, 1895				
New York, N. Y	Mar. 27, 1895	Apr. 7, 1895	290	5	25	
Newport, R. I	Apr. 9, 1895	Apr. 17, 1895	137	6	9	
Southampton, England	May 17, 1895	June 1, 1895	3,320	4	24	Apprentice training ship.
Havre, France	June 2, 1895	June 12, 1895	105	6	7	
Gibraltar, Spain	June 28, 1895	July 2, 1895	1,368	3	29	
Tangier	July 2, 1895	July 6, 1895	37	5.3	2	
Madeira	July 11, 1895	July 18, 1895	613	4.7	2	
Yorktown, Va	Aug. 21, 1895	Sept. 21, 1895	3,781	4.6	23	
Hampton Roads, Va	Sept. 21, 1895	Sept. 25, 1895	35	4.6	2	
New York, N. Y	Sept. 27, 1895		276	6.2	15	
Total distance sailed			9,964			
Essex, Commander LOUIS KINGSLEY, commanding						**Apprentice training ship.**
Funchal, Madeira		Sept. 30, 1894				
Yorktown, Va	Nov. 11, 1894	Nov. 26, 1894	3,796			
Hampton Roads, Va	Nov. 26, 1894	Nov. 28, 1894	22			
Norfolk, Va	Nov. 28, 1894	Dec. 27, 1894	12			
New York, N. Y	Dec. 30, 1894	Jan. 11, 1895	304			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

THIRD RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Newport, R. I.	Jan. 12, 1895	Jan. 17, 1895	110			
Barbados	Feb. 14, 1895	Mar. 1, 1895	2,590	4		
Martinique	Mar. 8, 1895	Mar. 14, 1895	677	4		
Santa Cruz	Mar. 19, 1895	Mar. 26, 1895	368	3		
St. Thomas	Mar. 27, 1895	Apr. 6, 1895	37	4		
Port Royal, S. C.	Apr. 29, 1895	May 16, 1895	1,652	5		
Yorktown, Va.	May 26, 1895	June 7, 1895	611	3		
Hampton Roads, Va.	June 7, 1895	June 11, 1895				
New York, N. Y.	June 13, 1895		241	5		
Total distance sailed			10,420			
Monocacy, Commander R. E. IMPEY, commanding						Asiatic Station.
Shanghai, China	June 27, 1894	July 7, 1894	468			
Chemulpo, Korea	July 11, 1894	July 28, 1894	402			
Nagasaki, Japan	July 30, 1894	Aug. 30, 1894	146			
Chemulpo, Korea	Sept. 1, 1894	Sept. 3, 1894	253			
Chefoo, China	Sept. 4, 1894	Sept. 8, 1894	251			
Tientsin, China	Sept. 9, 1894					Moored to the bund at Tientsin, China, fourth quarter, 1894; moored to the bund at Tientsin, China, first quarter, 1895; moored to the bund at Tientsin, China, second quarter, 1895.
Total distance sailed			1,820			
Thetis, Lieut. Commander C. T. HUTCHINS, commanding. Relieved by Commander H. KNOX, June 15, 1895.						Special service.
San Francisco, Cal.	Sept. 19, 1894	Sept. 25, 1894				
San Diego, Cal.	Sept. 27, 1894	Oct. 1, 1894	430			Survey coast Lower California.
Magdalena Bay, Lower California	Oct. 5, 1894		663			
West Coast, Lower California			2,722			
San Diego, Cal.	Dec. 18, 1894	Jan. 10, 1895	600			
San Jaciento Point, Lower California	Jan. 13, 1895		519	6	17	
Surveying			1,386	4	128	
Magdalena Bay, Lower California		Apr. 15, 1895				
San Diego, Cal.	Apr. 19, 1895	May 8, 1895	613	7	43	
Mare Island, Cal.	May 11, 1895	Sept. 18, 1895	455	6	31	

San Francisco, Cal.	Sept. 18, 1895	Sept. 25, 1895	31	2.3	2	
San Diego, Cal.	Sept. 26, 1895		436	8.5	27	
Total distance sailed			7,855			
Castine, Commander THOMAS PERRY, commanding						Commissioned Oct. 22, 1894.
Tompkinsville, N. Y	Dec. 17, 1894	Dec. 21, 1894	5			
Provincetown, Mass	Dec. 23, 1894	Dec. 24, 1894	245			
Boston, Mass	Dec. 24, 1894	Dec. 26, 1894	42			
Kennebec River, Maine	Dec. 26, 1894	Dec. 29, 1894	113			
Booth Bay, Me	Dec. 29, 1894	Dec. 30, 1894	10			
Castine, Me	Dec. 30, 1894	Jan. 2, 1895	60			
New York Navy-Yard	Jan. 4, 1895	Feb. 3, 1895	392	10	40	
Ponta Delgada, Azores	Feb. 15, 1895	Feb. 18, 1895	2,373	8	190	Assigned to South Atlantic Station.
Gibraltar	Feb. 23, 1895	Mar. 2, 1895	839	8	87	
Malta	Mar. 6, 1895	Mar. 16, 1895	945	9	69	
Port Said	Mar. 21, 1895	Mar. 22, 1895	963	8	73	
Semailia	Mar. 23, 1895	Mar. 26, 1895	45	4	6	
Suez	Mar. 26, 1895	Mar. 29, 1895	45	5	5	
At sea, lat. 23° 17′ N., long. 36° 50′ E.	Mar. 31, 1895		431	8	34	
At sea, lat. 20° 33′ N., long. 38° 33′ E	Apr. 1, 1895	Apr. 1, 1895				
Aden	Apr. 4, 1895	Apr. 11, 1895	755	8	46	
Zanzibar	Apr. 20, 1895	Apr. 26, 1895	1,841	8	137	To protect American interests.
Rovuma Bay	Apr. 28, 1895	May 6, 1895	396	7	28	
Mozambique	May 8, 1895	May 16, 1895	303	7	29	
Johanna Island	May 17, 1895	May 25, 1895	275	8	20	
Mayotta Island	May 25, 1895	May 30, 1895	95	7	8	
Tamatave	June 3, 1895	June 12, 1895	774	7	64	
Delagoa Bay	June 18, 1895	June 27, 1895	1,248	8	91	
At sea, lat. 34° 26′ S., long. 24° 22′ E	June 30, 1895		974	7	53	
Total distance sailed			13,701			
Machias, Commander E. S. HOUSTON, commanding						Recommissioned Sept. 18, 1894. Asiatic Station.
Ponta Delgada, Azores	Dec. 2, 1894	Dec. 4, 1894	2,440			
Gibraltar, Spain	Dec. 9, 1894	Dec. 18, 1894	983			
Valletta, Malta	Dec. 22, 1894	Dec. 27, 1894	900			
Port Said	Dec. 31, 1894	Jan. 5, 1895	936			
Aden, Arabia	Jan. 16, 1895	Jan. 21, 1895	1,452	8	134	
Colombo, Ceylon	Jan. 30, 1895	Feb. 8, 1895	2,195	9	100	
Singapore, Straits Settlements	Feb. 16, 1895	Feb. 26, 1895	1,747	9	121	
Hongkong, China	Mar. 6, 1895	Mar. 28, 1895	1,578	8	131	
Amoy, China	Mar. 30, 1895		314	8	32	
Nagasaki, Japan	Apr. 25, 1895	Apr. 27, 1895	868	8	55	
Chefoo, China	May 1, 1895	June 6, 1895	645	8	42	
Port Arthur, China	June 6, 1895	June 8, 1895	108	11	11	
Chefoo, China	June 8, 1895		94	7	8	
Total distance sailed			14,450			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

THIRD RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Alert, Commander W. A. MORGAN, commanding. Relieved by Commander G. E. IDE, Oct. 8, 1894. Relieved by Lieut. J. H. C. COFFIN (June 21), temporarily. Relieved by Commander J. H. HANFORD, July 21, 1895.						Pacific Station.
St. George, Pribilof Islands	June 18, 1894	July 16, 1894				
St. Paul Island	July 16, 1894	July 19, 1894	39			Assigned to temporary duty with Bering Sea fleet.
St. George Island	July 19, 1894	July 22, 1894	39			
Dutch Harbor, Unalaska	July 24, 1894	July 30, 1894	189			
St. George Island	Aug. 2, 1894	Aug. 7, 1894	320			
St. Paul Island, Northeast Point	Aug. 11, 1894	Aug. 13, 1894	810			
Dutch Harbor, Unalaska	Aug. 14, 1894	Aug. 17, 1894	251			
St. George Island	Aug. 18, 1894	Aug. 20, 1894	180			
St. Paul Island, Northeast Point	Aug. 24, 1894	Aug. 25, 1894	529			
St. George Island	Aug. 25, 1894	Aug. 31, 1894	69			
St. Paul Island, Black Bluffs	Aug. 31, 1894	Sept. 1, 1894	40			
St. George Island	Sept. 1, 1894	Sept. 6, 1894	87			
Dutch Harbor, Unalaska	Sept. 7, 1894	Sept. 15, 1894	200			
San Francisco, Cal	Sept. 27, 1894	Sept. 28, 1894	2,079			
Mare Island, Cal	Sept. 28, 1894	Jan. 24, 1895	30			Undergoing repairs at navy-yard.
San Diego, Cal	Jan. 31, 1895	Feb. 3, 1895	436	6	33	
Acapulco, Mexico	Feb. 11, 1895	Feb. 12, 1895	1,465	7	79	
San Jose, Guatemala	Feb. 15, 1895	Feb. 16, 1895	565	8	27	
La Libertad, Salvador	Feb. 17, 1895	Feb. 23, 1895	97	6	7	
San Jose, Guatemala	Feb. 23, 1895	Mar. 4, 1895	107	8	6	
Panama, Colombia	Mar. 9, 1895	May 2, 1895	884	7	55	
San Juan del Sur, Nicaragua	May 6, 1895	May 12, 1895	560			
Panama, Colombia	May 16, 1895	June 22, 1895	557			
Total distance sailed			9,683			
Ranger, Commander E. LONGNECKER, commanding. Relieved by Commander E. W. WATSON, Dec. 1, 1894.						Pacific Station.
San Francisco, Cal	Oct. 5, 1894	Oct. 6, 1894	991			
Mare Island, Cal	Oct. 6, 1894	Jan. 24, 1895	26			
San Diego, Cal	Jan. 31, 1895	Feb. 3, 1895	535	7	27	
Acapulco, Mexico	Feb. 10, 1895	Feb. 11, 1895	1,449	8	68	
Buenaventura, Colombia	Feb. 20, 1895	Mar. 27, 1895	1,594	8	67	
Panama, Colombia	Mar. 29, 1895	Apr. 3, 1895	356	7	21	
Buenaventura, Colombia	Apr. 5, 1895	May 2, 1895	369	6	17	

Esmeraldas, Ecuador						
Panama, Colombia	May 4, 1895	May 10, 1895	289	5	21	
Guayaquil, Ecuador	May 13, 1895	May 26, 1895	499	5	24	
	June 1, 1895		775	6	46	
Total distance sailed			6,883			
Monongahela, Commander W. H. BROWNSON, commanding						On practice cruise for instruction of naval cadets.
Annapolis, Md	Aug. 30, 1894	June 10, 1895				
Funchal, Madeira	July 13, 1895	July 18, 1895	3,460			
Hampton Roads, Va	Aug. 20, 1895	Aug. 22, 1895	3,808			
Annapolis, Md	Aug. 28, 1895		170			
Total distance sailed			7,447			
Portsmouth, Commander JOHN MCGOWAN, commanding						Apprentice training ship.
Newport, R. I	June 27, 1894	July 4, 1894	2,857			
Queenstown, Ireland	July 30, 1894	Aug. 4, 1894	340			
Cowes, Isle of Wight	Aug. 7, 1894	Aug. 10, 1894	11			
Southampton, England	Aug. 10, 1894	Aug. 18, 1894	93			
Cherbourg, France	Aug. 19, 1894	Aug. 28, 1894	1,196			
Gibraltar, Spain	Sept. 17, 1894	Sept. 17, 1894	637			
Funchal, Madeira	Oct. 2, 1894	Oct. 4, 1894	70			
Newport, R. I	Nov. 21, 1894	Nov. 30, 1894	4,053			
New York, N. Y	Dec. 3, 1894		155			Placed out of commission Jan. 17, 1895.
Total distance sailed			9,412			

FOURTH RATE.

Vesuvius, Lieut. Commander HARRY KNOX, commanding						North Atlantic Station.
New York, N. Y	Aug. 4, 1894	Nov. 7, 1894				
New London, Conn	Nov. 8, 1894	Nov. 24, 1894	99.5			
New York, N. Y	Nov. 24, 1894	Jan. 28, 1895	518			
Norfolk, Va	Feb. 5, 1895	Mar. 4, 1895	535	11.2	46	
New York, N. Y	Mar. 30, 1895	Apr. 11, 1895	728	12.1	62	
League Island, Pa	Apr. 12, 1895		222	10.8	17	Placed out of commission Apr. 25, 1895.
Total distance sailed			2,102.5			
Yantic, Lieut. Commander S. M. ACKLEY, commanding						South Atlantic Station.
Colonia, Uruguay	May 24, 1894	July 5, 1894	120			
Montevideo, Uruguay	July 6, 1894	July 14, 1894	350			
Rosario Argentine Republic	July 20, 1894	Aug. 20, 1894	52			
Dos Hermanos, Argentine Republic	....do	Aug. 26, 1894	169			
Colonia, Uruguay	Aug. 27, 1894	Sept. 11, 1894	27			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

FOURTH RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Buenos Ayres, Argentine Republic	Sept. 11, 1894	Sept. 28, 1894	120			
Montevideo, Uruguay	Sept. 29, 1894	Oct. 13, 1894				
Buenos Ayres, Argentine Republic	Oct. 14 1894	Oct. 17, 1894	90			
Montevideo, Uruguay	Oct. 17, 1894	Mar. 24, 1895	90			Undergoing repairs.
Colonia, Uruguay	Mar. 24, 1895	Apr. 17, 1895	120	6	6	
Montevideo, Uruguay	Apr. 18, 1895	May 20, 1895	120	6.6	7	
Paysandu, Uruguay	May 26, 1895	June 1, 1895	265	6.4	21	
Fray Bentos, Uruguay	June 3, 1895	June 10, 1895	53	6.7	5	
New Palmira, Uruguay	June 10, 1895	June 19, 1895	50	6.6	3	
Colonia, Uruguay	June 19, 1895	June 28, 1895	49	6.7	3	
Buenos Ayres, Argentine Republic	June 28, 1895		30	8.2	21	
Total distance sailed			1,785			
Petrel, Lieut. Commander W. H. EMORY, commanding						Asiatic Station.
Dutch Harbor, Unalaska	July 2, 1894	July 7, 1894				
Cape Sazareff, Unimak Island	July 9, 1894	July 10, 1894	160			Assigned to temporary duty with Bering Sea fleet.
East Anchor Cove, Unimak Island	July 10, 1894	July 12, 1894	40			
Ikutan Bay	July 12, 1894	July 13, 1894	10			
Delareff Harbor, Unga Island	July 15, 1894	July 17, 1894	487			
Cape	July 16, 1894	do	69			
	July 17, 1894	July 22, 1894	73			
	July 22, 1894	July 25, 1894	27			
	July 25, 1894	Aug. 1, 1894	140			
	Aug. 3, 1894	Aug. 6, 1894	239			
	Aug. 6, 1894	Aug. 10, 1894	40			
	" 1894	Aug. 11, 1894	40			

Shanghai, China	Apr. 28, 1895	June 16, 1895				
Woo-Hoo, China	June 17, 1895	June 19, 1895	623			
Kinkiang, China	June 20, 1895	June 20, 1895	257			
Hankow, China	June 22, 1895	June 24, 1895	197			
Woo-Hoo, China	June 25, 1895	June 25, 1895	142			
Chinkiang, China	June 26, 1895	June 27, 1895	339			
Shanghai, China	June 27, 1895	June 29, 1895	97			
			160			
Total distance sailed			7,760			
Fern. Lieut. Commander J. N. HEMPHILL, commanding. Relieved by Lieut. Commander G. A. BICKNELL Oct. 1, 1894.						Specia service. Engaged in carrying freight between the different yards and stations.
New York	July 23, 1894	Oct. 4, 1894				
League Island	Oct. 6, 1894	Oct. 9, 1894	223			
Norfolk	Oct. 11, 1894	Oct. 13, 1894	234			
Washington	Oct. 14, 1894	Oct. 21, 1894	174			
Norfolk	Oct. 22, 1894	Oct. 24, 1894	174			
League Island	Oct. 25, 1894	Oct. 26, 1894	234			
Cramp's shipyard, Philadelphia	Oct. 26, 1894	do	7			
League Island	do	Oct. 27, 1894	7			
Fort Mifflin	Oct. 27, 1894	do				
New Castle	do	Oct. 28, 1894				
Brandywine Light-House	Oct. 28, 1894	Oct. 29, 1894				
New York	Oct. 30, 1894	Nov. 6, 1894	223			
New London, lower harbor	Nov. 6, 1894	Nov. 11, 1894	97			
Hortens Point, Long Island	Nov. 11, 1894	Nov. 12, 1894	30			
Buoy No. 4, Ericsson trial	Nov. 12, 1894	do	9			
New London, lower harbor	do	do	40			
Light-House Wharf, New London	Nov. 14, 1894	Nov. 16, 1894	3			
Buoy No. 4, Ericsson trial	Nov. 17, 1894	Nov. 17, 1894	40			
New London, lower harbor	do	Nov. 18, 1894	40			
Light House Wharf, New London	Nov. 18, 1894	Nov. 19, 1894	3			
Buoy No. 4, Ericsson trial	Nov. 19, 1894	do	40			
New London, lower harbor	do	Nov. 21, 1894	40			
Buoy No. 4, Ericsson trial	Nov. 21, 1894	Nov. 21, 1894	40			
New Haven, Conn., inside breakwater	do	Nov. 22, 1894	25			
Buoy No. 4, Ericsson trial	Nov. 22, 1894	do	25			
New London Light-House Wharf	do	Nov. 24, 1894	40			
Newport, R. I	Nov. 24, 1894	Nov. 26, 1894	47			
Provincetown	Nov. 26, 1894	Nov. 27, 1894	134			
Boston	Nov. 27, 1894	Nov. 30, 1894	48			
Portsmouth, N. H	Nov. 30, 1894	Dec. 10, 1894	61			
Washington	Dec. 14, 1894	Dec. 26, 1894	722			
Maryland Point	Dec. 26, 1894	Dec. 27, 1894				
Rappahannock River	Dec. 27, 1894	Dec. 28, 1894				
Norfolk, Va	Dec. 28, 1894	Jan. 4, 1895	174			
League Island	Jan. 5, 1895	Jan. 7, 1895	234	8.9	10	
Cramp's shipyard	Jan. 7, 1895	do	7		1	
League Island	do	Jan. 28, 1895	7			
Fort Mifflin	Jan. 28, 1895	do	1			
League Island	do	Feb. 22, 1895	1			

The composition of the squadron on each station and the duties performed by each vessel—Continued.

FOURTH RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Fort Mifflin	Feb. 22, 1895	Feb. 22, 1895	1			
League Island	do	Feb. 23, 1895	1			
New York	Feb. 24, 1895	Mar. 3, 1895	223		10	
New London	Mar. 3, 1895	Mar. 4, 1895	100		5	
Newport	Mar. 4, 1895	Mar. 5, 1895	43		2	
Provincetown	Mar. 5, 1895	Mar. 6, 1895	134		7	
Boston	Mar. 6, 1895	Mar. 10, 1895	44		3	
Vineyard Haven	Mar. 10, 1895	Mar. 11, 1895	115		4	
Newport	Mar. 11, 1895	do	44		2	
New York	Mar. 12, 1895	Mar. 18, 1895	136		5	
Norfolk	Mar. 20, 1895	Apr. 7, 1895	289		12	
Washington	Apr. 8, 1895	Apr. 17, 1895	174		7	
Norfolk	Apr. 18, 1895	Apr. 19, 1895	174		7	
Annapolis	Apr. 20, 1895	Apr. 22, 1895	140		5	
League Island	Apr. 24, 1895	Apr. 24, 1895	339			
Cramp's shipyard	do	Apr. 25, 1895	7	8.5	13	
League Island	Apr. 25, 1895	do	7			
New York	Apr. 26, 1895	May 1, 1895	224		9	
Newport	May 2, 1895	May 2, 1895	135		6	
Boston	May 3, 1895	May 4, 1895	159		7	
Portsmouth, N. H.	May 4, 1895	May 11, 1895	61		3	
Boston	May 11, 1895	May 14, 1895	61		3	
Newport	May 14, 1895	May 15, 1895	159		7	
New York	May 16, 1895	May 29, 1895	135		6	
Norfolk	May 30, 1895	June 5, 1895	289		13	
Washington	June 6, 1895	June 12, 1895	174		8	
Indian Head, Md	June 12, 1895	June 13, 1895				
New York	June 14, 1895	June 23, 1895	463		17	
Norfolk	June 24, 1895	June 26, 1895	289		13	
Indian Head, Md	June 27, 1895	June 27, 1895				
Washington	do	July 7, 1895	174	8	8	
Norfolk, Va	July 8, 1895	July 9, 1895	174		8	
League Island, Pa	July 10, 1895	July 11, 1895	235			
Cramp's shipyard, Philadelphia	July 11, 1895	do	7		11	
League Island	do	July 12, 1895	7		4	
New York	July 13, 1895	July 19, 1895	224		8	
Newport, R. I	July 20, 1895	July 20, 1895	135		5	
Boston, Mass	July 21, 1895	July 22, 1895	159		5	
Portsmouth, N. H	July 22, 1895	July 27, 1895	61		2	
Boston, Mass	July 27, 1895	July 30, 1895	61		3	
Provincetown	July 31, 1895	July 31, 1895	46		2	
Newport, R. I	do	Aug. 1, 1895	127		5	

New London, Conn						
New York						
League Island	Aug. 1, 1895	Aug. 2, 1895	45		4	
Cramp's shipyard, Philadelphia	Aug. 3, 1895	Aug. 28, 1895	102		5	
Norfolk, Va	Aug. 29, 1895	Aug. 30, 1895	224		5	
Annapolis, Md	Aug. 30, 1895	do	7		2	
Washington	Aug. 31, 1895	Sept. 4, 1895	242		6	
Annapolis, Md	Sept. 5, 1895	Sept. 5, 1895	140		3	
Norfolk, Va	Sept. 6, 1895	Sept. 13, 1895	153		3	
League Island	Sept. 14, 1895	Sept. 14, 1895	153		4	
New York	Sept. 15, 1895	Sept. 17, 1895	140		3	
Newport, R. I	Sept. 19, 1895	Sept. 20, 1895	235		4	
Boston, Mass	Sept. 21, 1895	Sept. 26, 1895	224		7	
	Sept. 27, 1895	Sept. 28, 1895	135		3	
	Sept. 29, 1895		159		5	
Total distance sailed			8,889			
Bancroft, Lieut. Commander W. T. SWINBURNE, commanding						Practice ship for naval cadets. Apr. 1 to June 8, target practice in Chesapeake Bay.
Annapolis, Md	Aug. 30, 1894	June 17, 1895			11	
Port Jefferson, Long Island	June 21, 1895	June 26, 1895	542	6	37	
Newport News, Va	June 28, 1895	June 28, 1895	435	8	27	
Annapolis, Md	June 29, 1895		146	9	8	
Total distance sailed			1,123			
Michigan, Lieut. Commander R. M. BERRY, commanding. Relieved by Lieut. Commander B. S. RICHARDS, Dec. 3, 1894.						Special service. Survey of southern entrance of Detroit River.
Amherstburg, Ontario, Canada	May 9, 1894	Oct. 10, 1894	16			
Detroit, Mich	Oct. 10, 1894	Oct. 29, 1894	187			Instruction of Michigan naval militia.
Erie, Pa	Oct. 31, 1894	May 20, 1895	101	7	3	Winter quarters at Erie, Pa.
Cleveland, Ohio	May 21, 1895	July 2, 1895	50	7	3	
Kellys Island	July 2, 1895	July 3, 1895	15	10	3	
Put in Bay, Ohio	July 3, 1895	July 5, 1895	54	9	5	
Detroit, Mich	July 5, 1895	July 8, 1895	305	10	23	
Mackinac Island	July 10, 1895	Aug. 13, 1895	315	10	16	
Detroit, Mich	Aug. 15, 1895	Aug. 21, 1895	59	7	4	
Pelee Passage	Aug. 21, 1895					Surveying off Pelee Passage.
Total distance sailed			1,102			
Pinta, Lieut. Commander A. R. COUDEN, commanding						Special service. Moored at Sitka, Alaska.
Sitka, Alaska	Sept. 1, 1894	June 7, 1895	70	6	4	
Killisnoo, Alaska	June 7, 1895	June 10, 1895	108	7	5	
Juneau, Alaska	June 11, 1895	June 19, 1895	50	6	2	
Sandford Cove	June 19, 1895	June 20, 1895	25	8		
Dawson Glacier	June 20, 1895	do	57	7	6	
Off Takon Harbor	do	do	10	4		
Berners Bay	June 21, 1895	June 21, 1895	60	4	6	
Davidson Glacier	do	do	22	8		

The composition of the squadron on each station and the duties performed by each vessel—Continued.

FOURTH RATE—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Berners Bay	June 21, 1895	June 21, 1895	12	8	2	
William Henry Harbor	do	do	35	7	6	
Funters Bay	June 22, 1895	June 22, 1895	105	4		
Sitka, Alaska	June 23, 1895			7		
Total distance sailed			554			

TORPEDO BOAT.

Cushing, Lieut. F. F. Fletcher, commanding. Relieved by Lieut. R. C. SMITH, Aug. 1, 1895.						Special service.
Newport, R. I., under way in harbor		July 17, 1894	18			
Do		July 18, 1894	22			
Newport, R. I., to Coddington Cove and return		July 20, 1894	12			
Do		July 23, 1894	12			
Do		July 25, 1894	12			
Do		July 27, 1894	12			
Newport, R. I., to Tiverton Cove and return		July 30, 1894	30			
Newport, R. I., to Coddington Cove and return		Aug. 1, 1894	12			
Do		Aug. 3, 1894	12			
Do		Aug. 4, 1894	12			
Do		Aug. 7, 1894	30			
Do		Aug 8, 1894	12			
Do		Aug. 10, 1894	30			
Newport, R. I., under way in harbor		Aug. 16, 1894	14			
Newport, R. I., to Coddington Cove and return		Aug. —, ——	12			
Newport, R. I., to Coggeshall Ledge and return		Aug. —, ——	16			
Newport, R. I., to Coddington Cove and return		Aug. 24, 1894	12			
Newport, R. I., to Tiverton and return		Aug. 28, 1894 Aug. 30, 1894	30			
Sag Harbor, N. Y	Aug. 30, 1894	Sept. 1, 1894	65			
Sag Harbor, N. Y., to Nyack Bay and return		do	12			
Sag Harbor, N. Y., to Gardiners Bay and return	Sept 3, 1894	Sept. 3, 1894	14			
New London, Conn	do	Sept. 4, 1894	22			
Newport, R. I		do	40			
Newport, R. I., under way in harbor		Sept. 6, 1894	10			
Newport, R. I., to Coddington Cove and return		Sept. 7, 1894	12			
Newport, R. I., to Tiverton and return		Sept. 8, 1894	30			

Newport, R. I., under way in harbor		Sept. 15, 1894	1			
Sag Harbor, N. Y		Sept. 16, 1894	55			
Nyack Bay, N. Y	Sept. 16, 1894	Sept. 17, 1894	6			
Newport, R. I	Sept. 17, 1894	do	61			
Sag Harbor, N. Y	do	Sept. 18, 1894	55			
New London, Conn., via Peconic Bay	Sept. 18, 1894	Sept. 19, 1894	49			
Fishers Island and Stonington	do	Sept. 20, 1894	13			
Newport, R. I	Sept. 19, 1894	Oct. 22, 1894	32			
Newport, R. I., under way in harbor	Sept. 20, 1894	Oct. 24, 1894	20			
Newport, R. I., to Providence and return		Oct. 25, 1894	50			
Newport, R. I., to Tiverton and return		Oct. 26, 1894	30			
Do		Oct. 29, 1894	30			
Newport, R. I., to Providence and Tiverton and return		Nov. 20, 1894	60			
Newport, R. I., to Coddington Cove and return		Nov. 27, 1894	15			
Newport, R. I		Dec. 26, 1894				
Delaware Breakwater	Dec. 17, 1894	Dec. 19, 1894	252			
Washington, D. C	Dec. 20, 1894		285			Torpedo work.
Indian Head, Md	May 3, 1895	May 3, 1895	22	14	1	
Washington, D. C	May 13, 1895	May 15, 1895	22	14		
Norfolk, Va	May 15, 1895	May 17, 1895	185	14	11	
Beaufort, N. C	May 18, 1895	May 19, 1895	178	9	8	
Charleston, S. C	May 20, 1895	May 20, 1895	207	12	4	
Beaufort, S. C	do	May 21, 1895	90	12	3	
Port Royal, S. C	May 21, 1895	do	7	14		
Savannah, Ga	do	May 22, 1895	40	12	2	
Fernandina, Fla	May 24, 1895	May 24, 1895	140	10	7	Testing practicability of inland route for torpedo boats.
Jacksonville, Fla	do	May 27, 1895	46	8	1	
Norfolk, Va	May 29, 1895	June 14, 1895	586	10	17	
New York, N. Y	June 15, 1895	June 17, 1895	320	15	10	
Newport, R. I	June 17, 1894		136	15	6	
Coddington Cove and return	July 11, 1895	July 15, 1895	10	13		
Do	July 15, 1895	July 18, 1895	15	13		
Tiverton and return	July 18, 1895	July 19, 1895	28	14	1	
Coddington Cove and return	July 19, 1895	July 22, 1895	7	13		
West Neck Park, Shelter Island, Long Island Sound	July 22, 1895	July 23, 1895	61	14	3	
Through Noyack Bay, then back to Derrings Harbor, Shelter Island	July 23, 1895	July 24, 1895	32	13	1	
Through Great Puvine and Noyack Bay to Greenport, Long Island	July 24, 1895	July 25, 1895	34	13	1	
By Cornfield Light Vessel to Newport Torpedo Station	July 25, 1895	Aug. 2, 1895	82	10	3	
Rose Island and return	Aug. 2, 1895	Aug. 5, 1895	5	10		
Tiverton and return	Aug. 5, 1895	Aug. 6, 1895	28	15	1	
Coddington Cove and return	Aug. 6, 1895	Aug. 7, 1895	7	13		
Do	Aug. 7, 1895	Aug. 10, 1895	7	13		
Do	Aug. 10, 1895	Aug. 16, 1895	7	13		
Do	Aug. 16, 1895	Aug. 19, 1895	7	13		
Do	Aug. 19, 1895	Aug. 20, 1895	7	13		
Do	Aug. 20, 1895	Aug. 23, 1895	7	13		
Do	Aug. 23, 1895	Aug. 24, 1895	7	13		
Narragansett Pier	Aug. 24, 1895	Aug. 26, 1895	8	14		
By Point Judith Breakwater to Newport Torpedo Station	Aug. 26, 1895	Aug. 28, 1895	30	12	1	

The composition of the squadron on each station and the duties performed by each vessel—Continued.

TORPEDO BOAT—Continued.

Name of vessel and ports visited.	Date of arrival.	Date of departure.	Distance sailed.	Average speed.	Coal consumed.	Remarks.
			Knots.	*Knots.*	*Tons.*	
Coddington Cove and return	Aug. 28, 1895	Aug. 29, 1895	7	13	.....	
Do	Aug. 29, 1895	Aug. 31, 1895	7	13	.....	
Do	Aug. 31, 1895	Sept. 9, 1895	7	13	.....	
To Fishers Island Sound, Block Island, and return	Sept. 9, 1895	Sept. 12, 1895	83	13	3	
Coddington Cove and return	Sept. 12, 1895	Sept. 19, 1895	7	13	.....	
Do	Sept. 19, 1895	Sept. 23, 1895	7	13	.....	
Do	Sept. 23, 1895	Sept. 24, 1895	7	13	.....	
Do	Sept. 24, 1895	Sept. 25, 1895	7	13	.....	
Do	Sept. 25, 1895	Sept. 27, 1895	7	13	.....	
Do	Sept. 27, 1895	Sept. 30, 1895	7	13	.....	
Bristol, R. I., and return	Sept. 30, 1895	.....	22	15	.....	
Total distance sailed	.....	.....	4,085	.....	.....	

B.

REPORT OF THE SUPERINTENDENT OF THE NAVAL ACADEMY.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., September 28, 1895.

SIR: I have the honor to submit this report of the operations of the Naval Academy for the past year.

On November 16, 1894, Commodore R. L. Phythian was relieved of the duties of Superintendent by Capt. Philip H. Cooper.

The following table will exhibit the number of naval cadets at the Academy on October 1, 1894, and the number remaining in June, 1895, when the results of the annual examination were determined:

Class.	Oct. 1, 1894.	June 7, 1895.	Loss.
			Per cent.
First, line division	33	29	12
First, engineer division	12	12	0
Second	47	39	17
Third	67	60	10
Fourth	84	59	30

No vacancies were created by death or dismissal, the larger percentage being due either to failure at required examinations or to anticipation of such failure. The number that actually failed and were permitted to resign was 26, divided among the classes as follows, with the range of ages:

Class.	Number.	Range of ages.			
		Yrs.	*Mos.*	*Yrs.*	*Mos.*
First	3	21	8 to	22	7
Second	4	19	8 to	22	7
Third	5	18	2 to	21	7
Fourth	14	17	1 to	20	10

The time of service at the Naval Academy ranged from six years eight months to five months, the former from the first class, the latter from the fourth class.

The following list exhibits the age at the time of entering the Academy of all those who failed at examinations during the year:

20 years	2	18 years 3 months	1
19 years 11 months	2	17 years 11 months	1
19 years 9 months	1	17 years 8 months	1
19 years 5 months	1	17 years 6 months	1
19 years 2 months	1	17 years 4 months	1
18 years 11 months	2	17 years	1
18 years 8 months	4	16 years 10 months	3
18 years 7 months	1	16 years 9 months	1
18 years 4 months	1		

The average of which is 18 years 5 months, the mean age between the limits allowed to candidates being 17 years 6 months. But six of the above entered the Academy at an age less than the mean, the youngest of these having been nearly two years beyond the minimum upon entrance.

This is one of the many arguments to prove that the limit of age permitted by law is too great, and it is to be earnestly hoped that the ages may be established between 15 and 17.

Of the 26 above mentioned, 9 had previously failed and were admitted under a new permit—nearly 35 per cent of total failures. Statistics could be given to show that a small percentage of those readmitted after having once failed succeed in meeting the requirements of the course, which shows the wisdom of the statute in force at the Military Academy by which the recommendation of the Academic Board is necessary for the readmission of a rejected candidate. It is recommended that similar legislation may be sought for the Naval Academy. Since 1882 there have been 90 cases of such failures, some having returned a second and third time.

In May, 75 candidates presented themselves for examination, of which number 36 qualified both physically and mentally, the average age of those admitted being 17 years 7½ months.

In September, 124 candidates presented themselves for examination, of which number 52 qualified both mentally and physically, the average age of those admitted being 18 years and 2 months.

Upon the opening of the academic year the number of cadets at the Academy is 246, divided as follows:

First class, line division	26
First class, engineer division	12
Second class	59
Third class	60
Fourth class	89

The class which completed the four years' course in 1893 reported for examination in May, and from this class there were assigned 21 to the Line, 8 to the Engineer Corps, 1 to the Marine Corps, and 9 were honorably discharged.

During the first fifty years of the existence of the Naval Academy just completed, there have been received into it as students 4,320 young men, exclusive of the various classes of midshipmen sent to the Academy from the general service, in its earlier years, for periods of instruction. Of the 4,320 who have been admitted there remained in the service on July 1, 1895—

On the active list	873
On the retired list	111
Naval cadets	243
Total	1,227

It is earnestly recommended that the act of August 5, 1882, be so far modified that the selections for the various corps in the Navy may be made at the conclusion of the four years' course at the Academy; that the surplus graduates may be at that time honorably discharged. There seems to be no argument in favor of the two years' course afloat in an educational sense, and many arguments against it. The examination must necessarily be in nature similar to that passed at the end of the four years' course. The varying conditions of ship, station, and surroundings must be to the advantage of some and to the disadvantage of others. As a measure of justice to those who may become surplus graduates, they should be spared the two years' course afloat, which

tends to unfit them for civil pursuits. As a measure of justice to the service, the graduates of the Academy should be given the stimulus of a commission or a warrant to remove them as early as possible from a state of probation.

Should it be deemed necessary to retain the six years' course, the entire class upon leaving the Academy should be placed on board the same ship, subjected to systematic training, and under a uniform rule of discipline.

It is recommended that the legal requirement of age upon admission shall be from 15 to 17 years; that appointments shall be given one year in advance of admission; that admissions shall be only in the month of May; that the length of the course be four years, at the expiration of which those graduating and entering the service shall be commissioned in the lower grades of the Line, Engineer, and Marine Corps; that after a complete cruise of three years all ensigns shall be sent back to the Naval Academy to pursue a post-graduate course of one year, at the expiration of which a competitive examination will determine their relative positions upon the Navy list.

The routine of studies and practical exercises has been successfully pursued throughout the year. The department of English studies will be enlarged at the beginning of the academic year, and its extension will necessarily reduce slightly the time heretofore given to other studies, but to the benefit of the students.

It has been made evident that the appliances for practical training of the cadets are insufficient and not equal to the standard which should be sustained.

In the matter of the practice ship, it has been forced upon the Navy Department to assign to the Academy a vessel originally a steamer, then altered to be a storeship, for which service she is admirably adapted. As a training ship for cadets the only merit possessed by the *Monongahela* is that the accommodations are excellent. But, being unhandy and unwieldy, the result is that in many respects wrong principles are taught, and there is little to be said in favor of continuing that vessel in this service excepting the benefit of taking the cadets into a sea atmosphere.

Seamanship can not be taught alone by precept, and it is impossible to create a lively interest without possessing suitable instruments.

The Naval Academy should have two vessels of moderate size and so handy that practice under way can be had throughout the year. These vessels should be of about 900 tons displacement, composite-built, bark-rigged sailing vessels, with no steam appliances on board.

The quick judgment, the readiness of resource, and the unfailing nerve required of our naval officers in the management of modern men-of-war can only be developed through the teaching of seamanship, and that on board sailing vessels. The argument that seamanship is no longer necessary in these days of steam and of mastless ships is a grievous mistake; but the art must be taught in youth. It should still be the foundation stone of this institution.

The boats, both steam and sail, are old and nearly worthless, and should be replaced with new and serviceable boats. The pulling cutters have seen service since war times, having been used here more than twenty-five years. The steam launches are chiefly converted sailing launches. The Academy should have of cutters a type of light boats, suitable to the age and weight of cadets, and of steamers, handy boats, uniform in size and speed, with the most modern type of engines and boilers.

The disposition of late years has been to resort to athletic field games, and little inducement or encouragement to turn to the water. I should recommend that the cadets be given various types of sailing boats and racing shell, with the hope that there may be cultivated a disposition toward nautical sports, there being nowhere finer water privileges than at this place.

The gun battery should be established upon a firm and permanent basis, in order that instruction of cadets may not depend upon the uncertainty of such guns as are sent here being withdrawn to meet the exigencies of the service. An appropriation is urged for a sufficient number of guns of from 6-inch caliber to the lowest used, to constitute a permanent plant for the Naval Academy.

Attention has been called to the inadequate facilities for accommodating the cadets and for the pursuance of academic work. During the fifty years the Academy has been in existence there has been a gradual enlargement of the grounds from the original 10-acre plot to its present size, and with the several additions of land structures have been erected to meet the temporary demands. The result is that there is no unity, much that has been done has been desultory in character, and at the present time there is little that can be considered worthy of a great national institution. It is safe to assert that there can never in the future be necessity for adding to the land possessed by the Government, and now is the time to institute such a vigorous reform that the Naval Academy may be established upon a basis which in dignity of style and character will be worthy of this nation. Young men are gathered here as the wards of the Government, to be educated as its representatives in an honorable profession. They are called from all classes of society, and the standard to be placed before them should be on the highest plane. To accomplish that purpose they should be surrounded by the finest types of everything connected with daily life. They should come in contact with all that is best, both in personnel and material. It is hoped that Congress will be liberal in its appropriations for the rehabilitation of the Naval Academy.

Copies of the reports of the commanding officers of the practice ships *Monongahela* and *Bancroft* are transmitted herewith.* The *Monongahela*, with the first, third, and fourth classes, sailed from Annapolis on June 10 and returned August 28, having visited Funchal, Madeira, remaining there five days. Her cruise, although brief, was productive of good results. Through the energy and zeal of Commander W. H. Brownson, commanding, and the officers of the ship, a lively interest was aroused in the cadets and much practical instruction imparted. The *Bancroft*, under the command of Lieut. Commander W. T. Swinburne, made three trips of two weeks each from Annapolis to Gardiners Bay, Long Island, with detachments of the second class and with the engineer cadets of the first class, visiting the Newport News shipbuilding yard each trip, to afford the cadets an opportunity to inspect the three gunboats being built there. Much of value is obtained by the work in the *Bancroft*, but she is too small to accommodate a sufficient number of cadets to warrant longer absences and to give all members of the class some experience during the summer.

Very respectfully, P. H. COOPER,
Captain, United States Navy, Superintendent.

CHIEF OF BUREAU OF NAVIGATION,
Navy Department, Washington, D. C.

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* Copies of the reports of the commanding officers of the practice ships are omitted.

C.

REPORT OF THE COMMANDANT OF THE NAVAL TRAINING STATION.

UNITED STATES NAVAL TRAINING STATION,
Newport, R. I., July 11, 1895.

SIR: I have the honor to submit the operations at this station during the year ending June 30, 1895.

On August 20, 1894, I assumed command of this station as the relief of Capt. F. M. Bunce, U. S. N.

During the year the number of apprentices under training at this station was 479; of this number there were—

At the station June 30, 1894	160
Received to July 1, 1895	319
Transferred	323
Discharged	43
Deserted	5
At station June 30, 1895	108

Of those received there were—

Received from the *Minnesota*	256
Received from the *Richmond*	53
Received from the *Wabash*	4
Received from desertion	3
Enlisted at this station	3
Total	319

There were transferred from station to ships:

Portsmouth	96
Essex	105
Vermont	3
Detroit	1
Dolphin	1
Wabash	6
Atlanta	1
San Francisco	1
Alliance	108
Franklin	1
Total	323

There have been discharged from the service for—

Inaptitude	26
Physical disability	13
General Order, No. 414	3
By death	1
Total	43

Largest number at station July 2, 1894	161
Smallest number at station April 29, 1895	38
Average number daily present	102

The system of training has been the same as that described by my predecessor in the report of the preceding year, with some slight modifications, due to experience and changed conditions, the established routine being persistently and faithfully followed.

In the early part of the year a pier 475 feet long and 15 feet wide, with a head 25 feet square, has been constructed from about the center of the east sea wall, and the training ship *Constellation* changed from her moorings, about one-eighth of a mile south of the island, and moored at the head of the pier in the inner harbor, her position now being of great advantage to facilitate the getting of apprentices on board for seamanship drills and the saving of much time. A channel 20 feet in depth has been dredged between the causeway and the old wharf. There has been no material change in the depth of water in this channel since the dredging was completed. The soundings between the pier and the old wharf have been increased by dredging to 6 feet at low water, which makes a very useful place to moor boats in use at the station. No garbage is thrown overboard from the ship; it is placed in a scow and dumped in deep water outside.

During a severe southwest gale in February, the entire sea wall on the south and west sides of the island was completely destroyed or materially damaged. This wall has been rebuilt and relaid in cement, which has greatly increased its strength. Of this wall 1,050 feet were rebuilt and 50 feet repaired.

Grading of the grounds and filling in, as previously authorized, has been continued during the year, and all buildings painted.

Very respectfully,

F. W. DICKINS,
Commander, U. S. N., Commanding.

The CHIEF OF BUREAU OF NAVIGATION,
Navy Department, Washington, D. C.

D.

REPORT OF THE PRESIDENT OF THE NAVAL WAR COLLEGE AND TORPEDO SCHOOL.

UNITED STATES NAVAL STATION,
Newport, R. I., October 5, 1895.

SIR: I have the honor to submit a summary of the work done by the Naval War College during the past year.

At the close of the session of 1894, September 30, the officers who had been in attendance during the summer were detached, leaving as the permanent staff of the college the following officers: Lieut. W. R. Rush, Lieut. H. B. Wilson, Ensign F. Marble, and Capt. R. Wallach, United States Marine Corps.

Commander C. H. Stockton, whose three years' term of duty had just expired, was detailed at the request of the president of the college to the important special duty of preparing for publication the lectures on international law delivered during the preceding summer by the late Prof. Freeman Snow, of Harvard University, whose sudden and lamented death had prevented his publishing them himself. Professor Snow's manuscript notes were often very meager, owing to his habit of speaking extemporaneously, but they have been revised and expanded by Commander Stockton, assisted by the advice and suggestion of Professor MacVane and Mr. Conant, Professor Snow's colleagues at Harvard, and the book is now in press. Commander Stockton has brought to this work a thorough knowledge of the subject and varied experience of international naval episodes, which have made his services particularly valuable.

During the autumn and winter the officers of the staff continued and completed the work begun during the summer. Papers and data relating to the solutions of the several problems in coast defense, strategy, and international law, were revised, printed, and circulated among officers of the Navy. Copies of war charts, and plans for the defense of Narragansett Bay, Fishers Island Sound, and other strategic points, were forwarded to the Secretary of the Navy, and by his direction filed in the Office of Naval Intelligence. Many valuable deductions resulting from the discussion and study of the college staff and officers in attendance were revised, classified, and filed in the archives of the college.

A plan for combined summer maneuvers between the North Atlantic Squadron and a land force of militia and regulars, to include the attack and defense of Gardiners Bay and the eastern end of Long Island, was arranged.

During the spring detailed preparations were made by the staff for the session of 1895. Profiting by the experience of last year, and having one more officer on permanent duty, it was possible to get the problems and plans for the coming session more nearly complete before the 1st of June. Three officers, ordered a few weeks in advance of that date, assisted in this work.

On the 1st of June the session of 1895 opened, the following officers having reported in attendance, including the three just mentioned:

Capt. H. B. Robeson.
Capt. L. Kempff.
Capt. N. Ludlow.
Commander E. White.
Commander J. Bishop.
Commander T. A. Lyons.
Commander E. Longnecker.
Commander W. W. Reisinger.
Commander R. M. Berry.
Lieut. Commander F. P. Gilmore.
Lieut. Commander J. E. Pillsbury.
Lieut. J. C. Wilson.
Lieut. C. W. Ruschenberger.
Lieut. H. Winslow.
Lieut. H. H. Barroll.
Lieut. W. B. Caperton.
Lieut. W. L. Rodgers.
Lieut. C. H. Harlow.
Lieut. F. W. Kellogg.
Lieut. L. J. Clark.
Lieut. H. Eldredge.
Ensign C. S. Stanworth.
Ensign G. Tarbox.
Ensign W. B. Franklin.
Ensign S. E. Kittelle.

In addition to these twenty-five officers of the Navy, the following attended the course by permission of the Department: Lieut. E. P. Bertholf, United States Revenue-Cutter Service; Lieut. H. L. Willoughby, Rhode Island Naval Reserve; Lieut. T. Fritsche, Royal Danish Navy.

Before the end of the session the following officers were detached by order of the Department:

Commander R. M. Berry, July 3.
Ensign S. E. Kittelle, July 16.
Lieut. C. W. Ruschenberger, July 22.
Lieut. J. C. Wilson, August 20.
Commander E. Longnecker, August 26.
Capt. H. B. Robeson, September 2.
Capt. L. Kempff, September 2.
Lieut. H. Eldredge, September 9.
Lieut. Commander F. P. Gilmore, September 12.
Commander W. W. Reisinger, October 1.
Lieut. H. Winslow, October 1.

Captain Robeson and Captain Kempff were ordered on the date named to court-martial duty in New York. The former is detached upon the completion of that duty; the latter has not yet been able to return to the War College.

The general scheme of the course this summer has been the same, somewhat amplified and slightly modified by experience, as that of last year. A full abstract will be submitted at an early date, which, like that of last year, already printed and distributed to the service by the Department, will contain a fuller description of the course than the limits of this report permit, and also indicates the more important deductions drawn from the study and discussion of the past summer upon various problems of naval warfare and coast defense.

The course was opened by an eloquent address by the Honorable William McAdoo, Assistant Secretary of the Navy, which has already been printed and distributed to the service.

At other times during the summer, also, the officers had the benefit of listening to addresses by well-known civilians upon subjects closely concerning naval officers in their relations as national representatives. The following gentlemen by the request of the Department, or of the college, delivered addresses:

Mr. Alexander Porter Morse—International relations.
Hon. Wm. E. Russell—Individualism in government.
Mr. Charlemagne Tower, jr.—Earl Cornwallis and his connection with the American war.
Hon. Frederick R. Coudert—International law, the rights of ships.

The advantage of having three or four such addresses at the War College every summer in my opinion is very great, both to the officers who hear them, in broadening and elevating their minds, and to the service in general, by extending the influence of the War College, and indirectly familiarizing the public with its aims and methods, and so

strengthening the claims of the Navy upon the intelligent support of the nation.

A list of the lectures delivered during the session is inclosed, marked A.

Captain Mahan, after the absence of several years, delivered again his course of lectures on Strategy, revised and in part rewritten. The value of these lectures can not be overstated; they are especially important as supplementing and guiding the discussion of practical problems in warfare; and it is to be hoped that in every succeeding year the officers in attendance will have the benefit of hearing them. Captain Mahan's authority as an expounder of the art of war is now so universal that it hardly needs here be said that the War College has always regarded him as its greatest master, and heartily supports his teaching, to which in the past it has owed so much.

Commander Stockton delivered a course of lectures upon international law based upon those of Prof. Freeman Snow, already mentioned. In connection with this course two hypothetical situations involving several points of international law were stated, and discussed by several officers, and solutions given by Commander Stockton. A copy of these situations is inclosed, marked B.

Commander Goodrich, under orders from the Department, delivered an able series of lectures on Coast Defense, which will be the beginning of what is expected to be an exhaustive treatise upon this subject.

Captain Wallach, United States Marine Corps, of the permanent staff of the college, read three papers on the military operations of the Chino-Japanese war, in which he analyzed the campaigns and compared them with the famous ones of history, showing that the Japanese conducted their operations in accordance with the highest principles of the art of war.

The college also had the great advantage of listening to three addresses by Commander P. N. McGiffin, formerly of the Chinese navy, in which that brave officer told his experiences in the battle of the Yalu, accompanied by timely and critical observations on the conduct of modern naval warfare.

Capt. John Bigelow, jr., U. S. A., by permission of the War Department, gave six lectures on strategy, illustrated mainly from American campaigns, which were both instructive and interesting to his naval audience.

It is unnecessary here to enumerate all the other lectures, many of which were the same as delivered last year, revised where necessary by the light of recent experience.

An important feature of this session, as of last, was the consideration of war problems, the value of which in perfecting our knowledge of the art of war is unquestioned. The principal problem of this session had for its theater the New England coast from Nantucket northward. The conditions, as they might actually exist at the present day, gave the enemy a force three times as strong as ours and supposed his objective to be the occupation of Boston and Portland and the neighboring coast. A copy of this problem is inclosed, marked C. The complete solution with accompanying plans will be submitted later to the Department as a confidential document.

Several other problems dealing with strategy in supposed cases of war between foreign nations were suggested, but aroused less interest than they did last year, and much less than the New England problem, because officers of the Navy realize more and more the present urgent need of well-considered plans for the defense of our coast. But the more

general problems were not neglected, and one in particular, intended to give effect to the Department's expressed desire to begin the strategic study of the Caribbean Sea and the Gulf of Mexico, excited great interest. The solution of this problem will be submitted to the Department at an early date.

War charts and defense plans for Nantucket Sound and the adjacent waters were made, continuing those for Narragansett and Gardiners bays submitted last year. Such plans as then reported are very valuble, both for actual use in the emergency of sudden war and for training officers in the practical details of coast defense. Following the plan adopted last year the Department authorized parties of officers to make short reconnaissances of Nantucket Sound, Buzzards and Cape Cod bays, and the coast of Maine, in order to correct and complete by personal observation the plans for the war charts and coast defense problem.

A new feature introduced into this session of 1895 was the study of naval tactical situations, as distinguished from strategic problems, based upon the methods employed in his "Tactical problems" by Von Moltke to train the German officers to make quick decisions in sudden emergencies in face of the enemy. The other exercises of the course called chiefly upon the more deliberative qualities of the mind, inducing a certain slowness in decision which it was the object of these tactical situations to counteract. The result amply fulfilled the expectation.

The practice of war games excited even greater interest than last year. The rules and methods of playing the single ship and tactical games have been greatly improved, and it is certain that many questions of modern naval tactics can be settled by them. The strategic game has continued on much the same lines as last year. With greater familiarity and skill in practice it will in time come to be regarded by the Navy, as it is already by the German army, as an essential factor in the perfection of war plans.

By the cordial cooperation of Commander Converse and his assistants the officers in attendance received a course of instruction in torpedoes somewhat fuller than last year, which gave great satisfaction.

Throughout the summer session, as well as during the remainder of the year, the officers at the War College have had the excellent opportunities of reading afforded by the library, which has been purposely limited to those subjects the study of which the War College was founded to promote.

In July last, during the session of the college, the Secretary of the Navy, flying his flag aboard the *Dolphin*, visited Newport and made a detailed inspection of the War College. At the same time the North Atlantic Squadron, commanded by Rear-Admiral Bunce, was in port, and every facility was extended to the officers for familiarizing themselves with the work and methods of the War College.

At the request of the commander-in-chief, several tactical problems and experiments in signaling had previously been suggested by the college for practical solution by the fleet.

In conclusion I am happy to be able to state that the session just drawing to a close has been even more successful than that of last year. The approval and support of the officers in attendance, corroborating those that have gone before, may well be taken to represent the established conviction in the service of the serious importance of study of the art of war.

At the close of the last year's session I earnestly recommended the *continuance* of the system then adopted, already proved by its results.

With the added experience of another year it is desirable that I should express more in detail recommendations for the future. The most obvious defect in the general scheme is a certain lack of continuity, owing to the intervals separating the summer sessions. This, however, can easily be remedied by a slight increase in the permanent staff of the college, which will enable the work to be carried forward without interruption, and will result in the preparation before each summer session of a mass of well digested plans based upon the study and discussion of former years, to be placed at once in the hands of officers ordered in attendance, and thereby facilitate and guide their consideration of the new problems and situations put forward each year. It is also very desirable, if compatible with the policy of the Department, that all—or at least a large majority—of the officers ordered to the college should be permitted to remain throughout the entire session.

To achieve the results suggested, I have the honor to make the following specific recommendations:

(1) That the permanent staff be not less than six officers.

(2) That they be assured a certain permanency in their duty, to continue not less than three years.

In this connection I beg to call attention to the estimates for the support of the War College already mentioned. I respectfully state that the sum appropriated by Congress for the present year is insufficient to meet the necessary expenses of the college and the proper care of the buildings and grounds.

With regard to the session of 1896, I have to recommend that the same number of officers be ordered in attendance as this year, namely, twenty-five. This number should be composed in my opinion of twenty from the grades of lieutenant and above and five lieutenants of the junior grade and ensigns. I recommend that the session of 1896 include four months, from the 1st of June to the 1st of October.

Very respectfully,

H. C. TAYLOR,
Captain, United States Navy,
President Naval War College and Torpedo School.

The ASSISTANT SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

NOTE.—Enclosures referred to in this report not published.

E.

REPORT OF THE HYDROGRAPHER TO THE BUREAU OF NAVIGATION, NAVY DEPARTMENT.

HYDROGRAPHIC OFFICE, NAVY DEPARTMENT,
Washington, D. C., October 1, 1895.

SIR: I have the honor to submit the following report of the work of the Hydrographic Office for the fiscal year ending June 30, 1895:

The principal efforts of the office have been in the direction of simplifying and standardizing the methods of work in every direction, but the expansion of the work, especially of the productive work, has been mainly on the Great Lakes and the Pacific Ocean.

The operations of the branch office in Chicago, which was established in 1893, excited so much favorable interest as to induce the Cleveland Chamber of Commerce to request the establishment of a similar office at Cleveland. The Navy Department recommended the scheme favorably to Congress, which then made a suitable appropriation, and the new office was established in September, 1894. The usefulness of branch offices is now recognized generally throughout the lake region, and it is believed by the hydrographer that an extension of that service on the lakes will be highly beneficial to lake commerce. While there may be question as to the selection of places, there can be but little doubt as to the suitability of Duluth and Sault Ste. Marie. At the latter place, all the vessels that pass through the canal are detained several hours—an interval sufficiently long to enable visits to be made from the vessels to the branch office and from the branch office to the vessels. In respect to its advantages, Sault Ste. Marie is unique.

The strictly nautical character of the publications of the office relating to the Great Lakes has caused them to meet with general approval. The office, in various ways and by repeated effort, has endeavored to make it clear that no publications, however accurate they may be initially, will suffice for the purposes of navigation unless supplemented by the periodical issue of Notices to Mariners, Bulletins, etc., whereby the publications already in the possession of mariners may be kept continuously corrected for the many items of fresh information which constantly pour into an office of this kind.

It is remarkable that the immense commercial interests of the Great Lakes had not sooner received benefits similar to those conferred by the Government on the commerce of the seas. The dangers of navigation on the Great Lakes, owing to proximity to land, in thick and heavy weather, are uncommonly great. Although the conditions of navigation on the lakes vary in many ways from those on the seas, it is believed that, when the conditions are the same, lake navigators may be relieved of much danger and responsibility by having at hand the instrumentalities which have so long been available on the oceans. The policy of the office is to shape its work and publications so strictly to nautical needs as to avoid. as far as possible, duplicating the work already well

› by other Government branches, but the field to be covered is one
h can be occupied effectively only by nautical experts on shore act-
n cooperation with nautical experts afloat. The nautical work of
office embraces a comprehensive and far-reaching scheme, in which
ublication of charts is but a single one of many details.
second edition of the Pilot Chart of the Great Lakes has been
ished, as well as Sailing Directions and Sailing Charts of the lakes.
thly Notices to Mariners for the Great Lakes have been published
ıg the period of open navigation. Thus the navigators of the lakes
not only been provided with charts and sailing directions, but they
been provided with the means to keep those publications corrected
ew information.
r the extension of its work to the Great Lakes, the office has asked
o additional appropriation, but has employed, under existing laws,
t of its appropriation for the benefit of that region. It is believed,
ver, that the office should receive a larger amount for public
ing—that is to say, the work done by the Public Printer. From
und the expense of printing additional Notices to Mariners is to
ken. An additional amount of $1,200 per annum is needed.
e appropriation for the North Pacific Pilot Chart having passed
ress, a monthly chart has been issued, and has increased in value
ditional data have been obtained through the cooperation of those
ested in the navigation of that ocean. It is not yet possible to
on the monthly issues the storm tracks of the preceding month,
the number of observers is not sufficiently great for the purpose.
e hydrographer has recommended that sufficient surveying be done
; the north coast of South America to enable the Hydrographic
e to construct trustworthy charts of that coast. The interests of
ed States commerce are increasing in that region.
e stretch of coast lying to the westward of the mouth of Orinoco
r, which is unsurveyed and about which too little is known to
t of the construction of reliable charts, is more than 500 miles in
h. It is estimated that the necessary surveying operations would
ıd over four seasons, and that an appropriation of $5,000 would be
ıssary for the execution of the work.
e following details are based upon reports received from the heads
visions and from the officers in charge of the branch offices:

CHART CONSTRUCTION.

der the direction of Lieut. Commander C. T. Hutchins, U. S. N.,
ıanding the U. S. S. *Thetis*, the survey of the west coast of Lower
ornia has been extended from Boca de las Animas to Magdalena
A close examination of the resulting data, which were received
ıy and June, 1895, shows that all branches of the work have been
ecuted with unsurpassed vigor and thoroughness. The plotting
s for next season's work are prepared, and the computation and
ing for the reduction of this season's work have been begun. The
ting chart will be incorporated with that which has already been
ructed and engraved from the data forwarded between 1890 and
and, together, they will form the next of the series of coast charts
wer California, embracing the region between Abreojos Point and
San Lazaro.
e results of the survey of the southern entrance to the Detroit
r, carried on during the summer of 1894 by the officers of the U. S.
ichigan under the able direction of Lieut. Commander R. M. Berry,
N., commanding, were received in September. The plotting sheet

was redrawn for engraving on a scale of 3 inches to the statute mil and a preliminary chart was issued in May by photolithographing th drawing which had been prepared for engraving. The engraved char is now half finished.

A survey of the approaches to Cleveland having been ordered b the Bureau, the necessary projections and instructions had been draw up by the 1st of May. Since the opening of navigation this survey ha been carried on by the officers of the U. S. S. *Michigan* under the com mand of Lieut. B. S. Richards, U. S. N. The Bureau has directed th commanding officer of the *Michigan* to make other surveys and exam nations in localities on Lakes Michigan, Huron, and Erie, in conformit with requests made by persons interested in the commerce of the Gre Lakes.

Under the act of Congress dated July 10, 1894, the Government pu chased the Ourdan and Kolb engraving machine and the right to ma ufacture the same. A new machine has been installed with the rest the engraving establishment, and continues to render effective servi in engraving figures.

Mr. George W. Littlehales, chief of the Division of Chart Constru tion, has designed a machine for executing the border shading of cha plates. It is now under consideration to construct one of the machines, and thereby increase the capacity of the office to the exte of about one engraver's services each year. The cost of the machi would be $1,200. It would, therefore, pay for itself in one year.

In December last, a new power-worked lithographic printing pre capable of taking a stone measuring 36 by 52 inches, was installed.

From data collected by the hydrographer, the computations relati to standardizing certain tracks in Long Island Sound for the trials speed of United States vessels were made. The tracks were projecte and a descriptive report was submitted. Progress is being made in th work of similarly standardizing the naval speed trial tracks off th coast of Massachusetts.

During the year 61 new nautical charts were completed and pub lished. There are now 835 engraved plates available for the printing o nautical charts for the use of the Navy and the mercantile marine.

The number of copies of charts printed during the fiscal year an delivered to the other divisions of the office, exclusive of those printe to illustrate books and to accompany Notices to Mariners, was 100,742

Twenty-nine chart plates have been improved to an extent whic required the redrawing of a large portion of the chart.

The details relating to the construction of charts are set forth in th following statistical tables:

Locality.	Catalogue No.	Total cost of construction.	Title.	Scale.
North Atlantic Ocean	1400[9]	$120.79	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for September.	D. long. = 0.275
Do	1400[10]	129.48	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for October.	D. long. = 0.275
Do	1400[11]	102.63	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for November.	D. long. = 0.275
Do	1400[12]	131.25	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for December.	D. long. = 0.275
Do	1400[1]	139.97	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for January.	D. long. = 0.275
Do	1400[2]	125.00	The invariable data comprising the forecast shown on the Pilot Chart of the North Atlantic for February.	D. long. = 0.275
Japan	1437	350.92	Nagasaki Harbor, west coast of Kyushu	M = 6.0
Canada (British Columbia)	1439	434.09	Kyuquot Sound, west coast of Vancouver Island	M = 1.5
Do	1440	412.58	The inner channel between Juan de Fuca Strait and Canal de Haro	M = 6.0
Do	1442	315.70	Goletas Channel with passages leading into Queen Charlotte Sound	M = 2.0
Do	1432	723.77	Nootka Sound and Friendly Cove, west coast of Vancouver Island	M = 1.5
				1,000 yds. = 6.0
Illinois	1444	77.02	Chicago Harbor, Lake Michigan	5,000 ft. = 3.0
China	1445	947.90	Approaches to the Yangtze Kiang	M = 0.5
Chile	1446	58.08	Guanillos Cove	M = 3.5
			Punta Arenas Cove	1,000 yds. = 3.5
Do	1447	265.16	Anchorages on the coast of Chile:	
			Oscuro Cove	1,000 yds. = 3.45
			Rapel River	M = 2.0
			Coliimo Bay	M = 2.0
			Quintai Road	M = 2.0
			Matanza Cove	M = 3.5
			Port Yanez	M = 3.0
Do	1448	225.73	Anchorages on the coast of Chile:	
			Mocha Island	M = 0.4
			Rio Imperial	M = 2.0
			Milagro Cove	M = 3.0
			Ranu Cove	M = 2.5
			Port and River Lebu	M = 3.0
			Lamehuapi Cove	M = 4.0
			Muicolque Cove	M = 3.0
			Condor Cove	M = 4.0
Canada (British Columbia)	1451	837.09	West coast of Vancouver Island, from Nootka Sound to Klaskino Inlet	M = 0.5
Do	1452	581.23	Northwest part of Vancouver Island, including Queen Charlotte Sound and Scott Islands	M = 0.5
Do	1453	1,364.02	Waters between Vancouver Island and the mainland Thurlow Island to Queen Charlotte Sound	M = 0.5
Canada	1455	928.17	Waters between Vancouver Island and the mainland, from Burrard Inlet to Cortes Island, including part of the Strait of Georgia, British Columbia.	M = 0.5
Do	1456	134.31	Penetanguishene Harbor, Georgian Bay	St. M = 4.0

Charts engraved on copper during the fiscal year ended June 30, 1895—Continued.

Locality.	Catalogue No.	Total cost of construction.	Title.	Scale.
Canada	1457	$57.05	Killarney Harbor, Georgian Bay	St. M = 3.0
Do	1458	138.92	Owen Sound, Georgian Bay	St. M = 3.0
Do	1459	126.72	Harbors in Georgian Bay	St. M = 5.0
			Point au Baril Harbor and Alexander Inlet	St. M = 6.0
Do	1460	206.55	Harbors in Georgian Bay:	
			French River	St. M = 3.0
			McGregor Harbor	St. M = 5.0
			Tobermory Harbor	St. M = 5.0
			Lion's Head Harbor	St. M = 5.0
			Club Harbor	St. M = 5.0
			Rattlesnake Harbor	St. M = 3.0
Do	1461	383.12	Approaches to Collingwood, Georgian Bay	St. M = 2.0
			Collingwood Harbor	St. M = 6.0
Do	1463	110.60	Goderich Harbor, east coast of Lake Huron	St. M = 5.0
			Serpent Harbor, North Channel	St. M = 2.0
			Little Detroit, North Channel	St. M = 8.0
			Little Current, North Channel	St. M = 3.0
Do	1464	136.52	Clapperton Channel	St. M = 1.66
Venezuela	1481	93.95	Port Chichirivichi	M = 2.0
West Indies	1484	263.72	Island of Barbuda	M = 1.0
Canada (British Columbia)	1449	667.06	Barclay Sound, south side of Vancouver Island	M = 1.5
Do	1482	59.78	The United States Naval Stations	D. long. = 0.04
Do	1454	755.09	Waters between Vancouver Island and the mainland, from Texada Island to Thurlow Island	M = 0.5
Chile	1485	103.97	Port San Antonio and San Antonio de las Bodegas	M = 2.0
Do	1502	39.56	Lautero Cove	M = 8.0
West Indies	1488	77.40	Bajo Nuevo or New Bore	M = 0.88
Do	1489	152.72	Seranilla Bank	M = 1.0
Ohio	1498	60.84	Cleveland Inner Harbor, Lake Erie	1,000 yds. = 2.8
New York	1499	69.29	Charlotte Harbor, Lake Ontario	1,000 yds. = 4.6
Canada	1490	691.66	St. Lawrence River, Saguenay River to Orignaux Point	D. lat. = 53.28
Do	1491	587.56	St. Lawrence River, Orignaux Point to Goose Island	D. lat. = 52.5
Do	1492	934.05	St. Lawrence River, Goose Island to Quebec	D. lat. = 52.5
Chile	1501	40.02	Tames Bay	M = 4.0
Brazil	1503	423.44	Natal to Pernambuco	D. lat. = 14.5
Do	1504	754.89	Pernambuco to Rio San Francisco do Norte	D. lat. = 14.5
Venezuela	1505	85.98	Port of Barcelona, Guzman Blanco Bay	M = 2.0
Chile	1506	40.91	Port of Guasco	M = 2.0
South Pacific	1507	113.58	Gilbert Islands:	
			Byron Island	M = 4.0
			Barry Island	M = 4.0

Canada	1406	51.71	*Mohawk Bay, Lake Erie*	M = 3.5
United States and Canada	1476	1,151.35	Lake Huron and Georgian Bay	St. M = 3.0
Do	1474	1,039.19	Lake Superior	D. lat. = 5.975
Japan	1485	178.70	Saigo Minato, Oki Islands, Dogo	D. lat. = 6.24
Do	1483	306.45	Obama Harbor Northwest Coast of Honshu	M = 6.0
United States and Canada	1465	495.78	St. Joseph Channel with St. Marys River, Lake Huron, North Channel	M = 1.0
				M = 2.0
				St. M = 1.7
Chile	1509	89.51	Mocha Island	M = 2.0
Venezuela	1511	28.10	Carenero Harbor	1,000 yds. = 3.0
Total		19,261.55		

Charts lithographed and published during the fiscal year ended June 30, 1895.

Title.	Scale.	Number of copies.	Total cost.	Remarks.
Pilot Chart of the North Atlantic Ocean	D. long. = 0.27	48,000	$2,096.56	Issued monthly in cooperation with the division of marine meteorology.
Pilot Chart of the North Pacific Ocean	D. long. = 0.2	24,000	1,581.10	Do.
Land and Ocean Storms during August, September, and October of the years 1888–1893, inclusive.		4,000	126.43	Illustrated by six synoptic charts upon one sheet and furnished as a supplement to the Pilot Chart of the North Atlantic for August, 1894.
Do		1,000	52.44	Furnished to accompany a discussion of the storm of October 10–14, 1891.
Weather Charts for October 10–14, 1891, inclusive		1,000	25.19	Do.
Average tracks of storms during the period from 1878–1887, inclusive (Weather Bureau deductions).		6,500	193.63	Issued as a supplement to the Pilot Charts of the North Atlantic and the North Pacific Ocean for November, 1894.
The condition of the Atlantic from September 28–October 3, 1894.		4,000	189.61	Illustrated by six synoptic charts upon one sheet and furnished as a supplement to the Pilot Chart of the North Atlantic Ocean for December, 1894.
The Storm of November 23–24, 1894		100	3.80	Illustrated by eight synoptic charts upon one sheet. Printed also upon the reverse side of the edition of the Pilot Chart of the North Atlantic Ocean for March, 1895.
Recent accessions to our knowledge of Ocean Currents obtained through floating bottles.		200		Illustrated by chart showing the positions of deposits and recoveries of bottles in the Atlantic and accompanied by tables giving deposits and recoveries of bottles in the Pacific and in the Indian Ocean. Printed upon the reverse side of the Pilot Chart of the North Atlantic for June, 1895.
Steamer Routes from Brito to Yokohama and to Hongkong.		500		Illustrated by a chart of the Western Hemisphere, printed upon the reverse side of the Pilot Chart of the North Pacific Ocean for July, 1895.
Weather and Cloud Distribution in the Neighborhood of a Cyclonic Storm.		200		Illustrated by a synoptic chart, printed upon the face of the Pilot Chart of the North Atlantic Ocean for July, 1895.
Monthly Fog Charts, North Atlantic Ocean, 1894		100		Illustrated by twelve charts on one sheet and printed as a supplement upon the reverse side of the Pilot Chart of the North Atlantic Ocean for July, 1895.
Typhoon Warnings in the Philippine Archipelago.		100		Illustrated by two synoptic charts, with text, and printed also upon the reverse side of the Pilot Chart of the North Pacific Ocean for May 1895.
Pilot Chart of the Great Lakes	D. long. = 2.4	1,795	222.49	Showing all railroad connections, lights, and life-saving stations along the shores of the Great Lakes, and containing a small chart showing canals of the St. Lawrence River; a table showing length, number, and dimensions of locks, etc.; of canals in the waters connecting with the Great Lakes; tables showing distances between ports of the Great Lakes; "Rules for the use of oil to protect vessels in stormy waters" (with illustrations); a list of U. S. Weather Bureau stations, displaying storm, cautionary, and information signals, with illustrations and explanation of the flags employed; also a list of Canadian storm-signal stations, with illustrations and explanation of the signals employed.
Hydrographic Office Chart No. 1385. Variation Chart of the North Atlantic.	D. long. = 0.27	1,000	61.81	Showing lines of equal variation from degree to degree for the year 1894.
Hydrographic Office Chart No. 1443. Coasts of the Yellow Sea and Gulf of Pechili.	D. long. = 3.00	2,090	417.17	
Hydrographic Office Chart No. 1482. The United States Naval Stations.		1,000	126.94	
Hydrographic Office Chart No. 1498. Cleveland	[illegible]	450	31.14	Printed for the division of supply.

Hydrographic Office Chart No. 1680, Detroit River from Detroit River (Bar Point) Light-House to Mamajuda Light-House.	M. = 3.125	2,000	377.08	
Plans of Chicago Harbor, Milwaukee River Entrance, Milwaukee Harbor of Refuge, Sturgeon Bay, Hay Lake Channel; Currents of Lake Michigan and of Lake Superior; Currents of Lake Huron; Currents of Lake Erie; Currents of Lake Ontario; "Rules for the use of oil to protect vessels in stormy waters" (illustrated); Canadian Storm Signals; U. S. Weather, Temperature, and Storm Signals.	.....	570	103.87	Printed for Sailing Directions of the Great Lakes.
Index Charts Ax, A, B, C, D, P, F, R, H, T, I, S.	Various scales..	310	129.20	Printed for the catalogue of Hydrographic Office charts.
Index Charts N, O	....do	620		
Track Chart of the United States Naval Force in Bering Sea, Commander C. E. Clark, U. S. N., commanding, 1894:				
Western Sheet	D. long. = 1	300	155.15	Showing in colors the tracks of the U. S. S. *Mohican*, *Concord*, *Yorktown*, *Ranger*, *Adams*, *Alert*, and *Petrel*; of the U. S. F. C. S. *Albatross* and U. S. R. C. *Bear* and *Corwin*, and the distances cruised by each vessel in patrolling Bering Sea in 1894.
Eastern Sheet	D. long. = 1	300		
Chart showing Seals seen by United States Cruisers in Bering Sea in 1894.				
Western Sheet	D. long. = 1	64	43.26	Showing in red the number of seals seen by the United States cruisers and the number of seals taken by the sealing fleet in 1894.
Eastern Sheet	D. long. = 1	64		
U. S. Weather, Temperature, Cautionary, and Storm Signals.	.....	572	43.94	Printed for Sailing Directions.
Canadian Storm Signals	.....	572		
"Brief rules for the use of oil to protect vessels in stormy waters," (illustrated).	.....	572		
U. S. Weather and Temperature Signals since January 1, 1895.	.....	1,825	16.94	
Life-Saving Apparatus	.....	1,250	5.92	
Plotting Sheet of the Pilot Chart of the North Pacific Ocean.	D. long. = 0.2	30	13.40	Printed upon tracing cloth for the division of marine meteorology.
Form for Computing Latitudes, Longitudes, and Azimuths of Triangulation Stations.	.....	561	3.52	Printed for division of chart construction.
Plan of Santiago (Ponapi Island)	.....	103	27.15	Printed upon photolithographed copies of Hydrographic Office Chart No. 425.
Memorandum Wreck Report	.....	450	1.12	For division of marine meteorology.
McDonald Bay, Aleutian Islands	M. = 1	1,310	19.24	Published in Notice to Mariners No. 39, 1894.
Water Front of Norfolk Navy-Yard	100 ft. = ½ in.	1,350	24.94	Published in Notice to Mariners No. 40, 1894.
Plan of Constantine Harbor, Port Etches	M. = 2.95	1,350	23.35	Published in Notice to Mariners No. 45, 1894.
Do	M. = 2.95	.....	.....	Printed for Sailing Directions.
View of Fort San Miguel and the Chapel of Nossa Senhora de Nazareth.	.....	1,315	5.29	Published in Notice to Mariners No. 2, 1895.
Cook Inlet, Alaska	D. lat. = 3.7	1,396	33.32	Published in Notice to Mariners No. 4, 1895.
Do	D. lat. = 3.7	585		Printed for Sailing Directions.
Northwest Coast of Unimak Island, Alaska	D. lat. = 0.25	1,300	37.39	Published in Notice to Mariners No. 7, 1895.
Islands of Four Mountains, Alaska	D. lat. = 6.3	1,325	16.54	Published in Notice to Mariners No. 8, 1895.
Lazy Bay, Alitak Bay, Kadiak Island, Alaska	M. = 5	1,325	33.84	Published in Notice to Mariners No. 10, 1895.

Charts lithographed and published during the fiscal year ended June 30, 1895—Continued.

Title.	Scale.	Number of copies.	Total cost.	Remarks.
Alaska:				
Geese Islands and Strait, Itallic Island, Port Hebron, Ugak Bay, Semidi Islands, Alitak or Achiok Harbor, Ukamok or Chirokof Island. Usinka Strait, Afognak Strait and Bay, Saldovia, entrance to the Kenai River, West Coast of Cook Inlet, English Bay, Port Graham, Lukannon Bay, St. Paul's Island, Knik River.	Various scale	315	$34.31	Printed for Sailing Directions.
Dygogram		1,000	26.60	Printed for the compass office of the Bureau of Equipment, Department of the Navy.
Total			6,406.19	

NOTE.—In the preceding table the scale of the chart is expressed in inches by the use of the abbreviations D. long., the length of a degree of longitude on the equator; D. lat., the length of a degree of the meridian in the middle latitude of the chart; M., the length of a nautical mile; and St. M., the length of a statute mile.

CHART SUPPLY.

The following report exhibits the receipts, expenditures, corrections, etc., of charts in the division of chart supply for the fiscal year:

HYDROGRAPHIC OFFICE CHARTS.

Received from—	
Division of chart construction	25,114
Division of chart construction (lithographic)	5,045
Division of chart construction (for catalogues)	4,960
Total	35,119
Issued to—	
United States vessels	5,974
Agents, for sale	9,515
Archives	261
Office use	765
Branch hydrographic offices	4,593
United States Coast and Geodetic Survey	497
Home correspondents	334
Foreign correspondents	76
Miscellaneous	2,767
For catalogues	4,960
Total	29,742
Charts published	56
Charts canceled	17
Plans canceled	2
Copies of charts condemned	1,790
Copies of canceled charts condemned	2,365
Standards corrected from notices	545
Charts corrected from notices	23,561
Charts corrected from other sources	8,974
Hydrographic Office charts on hand June 30, 1895	61,315

There are 970 charts on issue, of which 823 are plate and 147 lithographs.

COAST SURVEY CHARTS.

Received from—	
United States Coast and Geodetic Survey	6,336
United States Coast and Geodetic Survey (to ships)	1,885
Total	8,221
Issued to—	
United States vessels	4,926
Archives	139
Office use	81
Branch hydrographic offices	610
Miscellaneous	804
Total	6,560
Standards corrected from notices	1,043
Charts corrected from notices	5,355
Charts corrected from other sources	606
Coast Survey charts on hand June 30, 1895	3,193

BRITISH ADMIRALTY CHARTS.

Received from—	
J. D. Potter	8,152
United States vessels	390
B. F. Stevens, to this office	298
B. F. Stevens, to United States vessels	622
Admiralty office	210
Total	9,672

Issued to—	
United States vessels, from this office	9,869
United States vessels, from B. F. Stevens	622
Archives	243
Branch hydrographic offices	451
Miscellaneous	133
Total	11,318
British Admiralty charts on hand July 1, 1894	12,645
British Admiralty charts received during fiscal year	9,050
Total	21,695
British Admiralty charts issued	10,696
British Admiralty charts condemned	977
Total	11,673
On hand June 30, 1895	10,022

Eighty-one new charts received, 3 reissued, 59 canceled, 1 dropped, 2,092 charts on issue.

Standards corrected from notices	754
Charts corrected from notices	3,049
Charts corrected from other sources	3,255

Complete outfits have been supplied to the following vessels: *Detroit*, *Machias*, *Yorktown*, and *Olympia* for the Asiatic Station; *Castine* for the South Atlantic Station, with a special portfolio for the Mediterranean Sea; *San Francisco*, *Marblehead*, *New York*, and *Columbia* for the European Station; *Minneapolis* and *Amphitrite* for the North Atlantic Station; and two complete outfits for the Pacific Station to the branch hydrographic office, San Francisco; also special outfits to the *Vesuvius*, *Alliance*, *Cushing*, and *Monongahela*, and to the revenue steamers *Grant* and *Wolcott*.

DIVISION OF SAILING DIRECTIONS.

ARCHIVES.

During the past year there have been received, indexed, and catalogued, and placed in the archives on the shelves for reference, 51[illegible] documents and 516 books and pamphlets.

Many charts have been received, registered, delivered on requisition, and rearranged; 4,002 copies of charts affected by Notices to Mariners have had reference marks made on them; 18 sets of index charts and 25 catalogues have been compared and kept correct to date, and the division has been kept supplied with the latest charts as fast as published.

For various reasons and purposes, about 11,000 charts were handled during the year.

Summary of new and corrected charts received and of old ones condemned by cancellation.

	Received.	Condemned.		Received.	Condemned.
Austrian	48	4	Norway	3	.....
British Admiralty	453	371	Russian	30	4
Canadian	3	.....	Spanish	23	20
Chilian	11	.....	Swedish	14	4
Danish	12	.....	U. S. Coast and Geodetic Survey.	139	139
Dutch	1	.....			
French	194	85	U. S. Hydrographic Office	261	2
Geological Survey	90	.....	U. S. Engineers	180	180
German	16	2	Washington State	1	.....
Italian	8	1			
Japanese	5	.....	Total since June 30, 1894	1,517	812
Miscellaneous	25	.....			

In addition to the above, 1,300 slips cut from Notices to Mariners have been pasted in the Sailing Directions, and 12 new charts have been prepared for the division of chart construction. New indexes have been prepared.

One thousand one hundred and seventy-seven announcements of importance to navigation were published in the usual form of Notices to Mariners, which were issued promptly on Saturday of each week, and the circulation of which, together with the extracts, amounted to 910,110.

The foreign Notices to Mariners and reports received have been translated and the more important information derived therefrom republished, as usual. A large amount of original matter from the reports received from United States vessels of war, United States consuls, and our correspondents in the merchant marine of various nationalities has also been published.

The index to the Notice to Mariners for 1894 was made up for the printer, as usual, in time to have it issued with the first notice for 1895, and was received from the printer January 3 and issued with the first notice of the year for the first time since its inauguration.

One hundred and forty-one announcements of importance to navigation were published in the usual form of Notices to Mariners of the Great Lakes, which were issued promptly on the 15th of each month, and the circulation of which, together with the extracts, amounted to 28,700. The index to the Notices to Mariners for the Great Lakes for 1894 was made up for the printer and published with the first issue for 1895.

The Lists of Lights have been revised and kept corrected to date. New editions of Vols. I and II were published, corrected, respectively, to November 15 and October 31, 1894. The preparation of Vols. IV, V, and VI was discontinued, and as a substitute Vol. III is being extended to include the west coast of Europe, with the view of publishing a new edition of that volume in July, 1895.

PUBLICATIONS.

SAILING DIRECTIONS.

New sailing directions, supplements, and other publications placed on issue during the year.

[Printed at the Government Printing Office.]

Title.	Character.	Price.
H. O. No. 88—The East Coast of South America, from Orinoco River to Cape Virgins, including Falkland, South Georgia, Sandwich and South Shetland Islands. Second edition, 1894.	Book	$1.50
H. O. No. 87—International Signal Code. Revised and corrected to 1894	do	3.00
Corrections for Part IV—U. S. Atlantic Coast Pilot*	Pamphlet	
Revised Supplement to H. O. No. 85—Sailing Directions for the Indian Ocean	do	.20
H. O. No. 110—The Gulf Stream	do	.10
Supplement No. 1, third edition, H. O. No. 64—Caribbean Sea and Gulf of Mexico, Vol. II.	do	.20
Corrections for Subdivision 19—U. S. Atlantic Coast Pilot*	do	
Corrections for Subdivision 20—U. S. Atlantic Coast Pilot*	do	
Corrections for Subdivision 21—U. S. Atlantic Coast Pilot*	do	
Corrections for Subdivision 22—U. S. Atlantic Coast Pilot*	do	
Corrections for Part III—U. S. Atlantic Coast Pilot*	do	
Supplement to H. O. No. 106—Azimuth Tables for the Great Lakes	do	.10
Supplement to H. O. No. 100—The Gulf and River of St. Lawrence	do	.10
Supplement to H. O. No. 37—Mediterranean Sea, Part I	do	.20
Supplement to H. O. No. 32—Light List, Vol. III	do	.20
Supplement No. 3 to H. O. No. 64—Caribbean Sea and Gulf of Mexico, Vol. I.	do	.10
Supplement to H. O. No. 86, second edition—Caribbean Sea and Gulf of Mexico, Vol. II.	do	.10
Supplement No. 3 to H. O. No. 73—Newfoundland and Labrador	do	.20
Supplement No. 2 to H. O. No. 20—Bering Sea and Coast of Alaska	do	.20
Supplement to H. O. No. 89, fourth edition—The West Coast of South America	do	.20
H. O. No. 109—Contributions to Terrestrial Magnetism. The Variation of the Compass, 1895.	Book	1.00

*Not for sale.

New sailing directions, supplements, and other publications, etc.—Continued.

Title.	Character.	Price.
H. O. No. 109*—Contributions to Terrestrial Magnetism. The Variation of the Compass, 1895.	Book	$1
H. O. No. 9—Bowditch Navigator, edition of 1894	do	
H. O. No. 13—Bowditch Useful Tables, edition of 1894	do	
H. O. No. 30—Light List, Vol. I. 1894	do	
H. O. No. 31—Light List, Vol. II, 1894	do	
Hydrographer's Report, 1894*	Pamphlet	
Hydrographic Office Catalogue of Charts, Plans, and Publications, 1895*	Book	
Rules of the Road, 1895*	Pamphlet	
Bulletin for the Great Lakes; giving a list of agents, publications, and charts, 1895.*	do	
H. O. No. 108, Part I—Sailing Directions for Lake Superior, St. Marys River, and Straits of Mackinac, 1894.	Book	1.00
H. O. No. 108, Part II—Sailing Directions for Lake Michigan, Green Bay, and Straits of Mackinac, 1894.	do	1.00
H. O. No. 108, Part III—Sailing Directions for Lake Huron, Straits of Mackinac, St. Clair and Detroit Rivers, and Lake St. Clair, 1895.	do	1.00

* Not for sale.

At the Government Printing Office being bound:

Supplement to H. O. No. 108, Part IV—Sailing Directions for North Channel and Georgian Bay, 1895.

During the year the following were prepared, kept corrected to date, and are now ready for the press:

H. O. No. 108, Part IV. Lakes Erie and Ontario.
Light Lists, Vols. I, II, and III.
Supplement to H. O. No. 102—The Azores, etc.
Supplement to H. O. No. 88—The East Coast of South America.
Supplement to H. O. No. 96—The Coast of British Columbia.
Supplement to H. O. No. 105—West Coast of Africa.

The following new publications were received and put on issue:

From the United States Coast and Geodetic Survey:
- Supplements to the various Atlantic Coast Pilots.
- Tide Tables, Pacific Coast, 1895.
- Notices to Mariners.
- Catalogue of Charts, Plans, and Sailing Directions.

From the United States Light-House Board:
- Beacons, Buoys, and Day Marks for the various districts, 1894.
- Light List, Atlantic Coast, 1895.
- Light List, Pacific Coast, 1895.
- Notices to Mariners and Bulletins.

From the United States Treasury Department:
- List of Merchant Vessels, 1894.

From the United States Nautical Almanac Office:
- Ephemeris and Nautical Almanac, 1896.
- Nautical Almanac, 1896.

From the British Admiralty (purchased):
- Norway Pilot, Part II, 1894.
- Supplement, 1894, to Pacific Islands, Vol. I.
- China Sea Directory, Vol. IV, 1894.
- Supplement, 1894, to North Sea Pilot, Part III.
- Hydrographic Notice, No. 3 of 1894.
- China Sea Directory, Vol. III, 1894.
- Tide Tables, British and Irish Ports, 1895.
- Channel Pilot, Part I, 1893.
- Channel Pilot, Part II, 1888.
- Channel Pilot, Part II, Supplement, 1892.
- West Coast of France, Spain, and Portugal, 1891.
- Hydrographic Notice, No. 2 of 1894.
- Mediterranean Pilot, Part I, 1894.
- Mediterranean Pilot, Part II, 1885.
- Mediterranean Pilot, Part II, Supplement, 1891.
- Mediterranean Pilot, Part III, 1890.

From the British Admiralty (purchased)—Continued.
Mediterranean Pilot, Part III, Supplement, 1894.
Australian Directory, Vol. III, 1894.
British Admiralty Catalogue, 1895.
Admiralty Light Lists, 1895.

The following publications were withdrawn from issue, being canceled by later editions placed on issue during the year:

H. O. No. 88, first edition—The East Coast of South America.
H. O. No. 30—Light List No. 1.
H. O. No. 31—Light List No. 2.
Supplements to the various H. O. Sailing Directions.
List of Beacons, Buoys, and Day Marks for the various districts.
Light List, Atlantic Coast, 1894.
Light List, Pacific Coast, 1894.
Tide Tables, Atlantic Coast, 1894.
Tide Tables, Pacific Coast, 1894.
List of Merchant Vessels, 1893.
British Admiralty Light Lists, 1894.
Tide Tables, British and Irish Ports, 1894.
Norway Pilot, Part II, 1880.
China Sea Directory, Vol. III, 1884.
China Sea Directory, Vol. IV, 1884.

The following Hydrographic Office publications of old date were withdrawn from issue and replaced by corresponding British Admiralty publications of later dates:

H. O. No. 34—English Channel, Part I.
H. O. No. 35—English Channel, Part II.
H. O. No. 52—Northwest and West Coasts of Spain and Portugal.
H. O. No. 60—The Bay of Biscay.
H. O. No. 70—Kattegat Sound and the Great and Little Belts.
H. O. No. 37—Mediterranean Sea, Part I.
H. O. No. 38—Mediterranean Sea, Part II.
H. O. No. 42—Mediterranean Sea, Part III.
H. O. No. 68—Mediterranean Sea, Part IV.

During the year 566 copies of Sailing Directions and 82 copies of Light Lists have been corrected and brought up to date to supply the places of corrected copies of these publications issued to vessels and branch offices previously.

VESSELS FITTED OUT.

The following vessels were supplied with outfits of Sailing Directions and nautical books from this division:

Name of vessel.	Outfit furnished.	Remarks.
Detroit	Asiatic Station	Regular outfit for cruising.
Machias	do	Do.
Yorktown	do	Do.
Charleston	Additional Asiatic Station	To complete outfit for Asiatic Station.
San Francisco	European Station	Regular outfit for cruising.
Marblehead	do	Do.
Castine	North and South Atlantic Station and special Mediterranean.	Do.
Minneapolis	North and South Atlantic	Do.
Vesuvius	Special North Atlantic	
Alliance	Special North Atlantic and European.	For training cruises.
Essex	do	Do.
Amphitrite	North and South Atlantic Station	Regular outfit for cruising.
New York	Additional European Station	To complete outfit for Mediterranean Station.
Columbia	do	Do.
Olympia	Asiatic Station	Regular outfit for cruising.
Monongahela	Special	Practice cruise of cadets.
Branch office, San Francisco	Pacific Station	To be kept ready for issue as required.
U. S. revenue cutter Grant	Special Pacific	For cruising Bering Sea.
U. S. revenue cutter Wolcott	do	Do.

SUMMARY.

lowing is a statement in regard to publications received and the division during the fiscal year:

Quarter.	Received.	Issued.	Condemned.
.....	3,503	1,686	208
.....	3,660	1,845	1,715
.....	1,453	1,741	397
.....	1,759	1,843	233
.....	10,375	7,115	2,553

or the fiscal year ended June 30, 1894, 7,533 received, 6,453

summary are included the (1,024) British Admiralty publica- chased and received during the year, and also those (753) vessels and branch offices.

MARINE METEOROLOGY.

the winter of 1894–95 the branch hydrographic offices at and Cleveland collected information relating to wrecks and ons to navigation in the Great Lakes. From the large number received the positions of such obstructions were tabulated and or the edition of the Pilot Chart of the Great Lakes issued in 5. For use in the same connection, the tables giving informa- ing to canals and the positions of light-houses and of life- ations in those waters, published on the first edition of the kes Pilot Chart, received a careful revision and were corrected

ydrographic Bulletin has been issued each week during the r, the last serial number being 304. Originally started as a nt to the Pilot Chart of the North Atlantic, the Hydrographic has grown into an exceedingly convenient means of dissemi- formation relative to the changes of lights, buoys, and other avigation; the positions in which derelicts are reported by and others; ice reports, and reports regarding other obstruc- ree navigation among the vessels navigating our home waters. on is now 2,165 copies, which are freely distributed, and nearly number reach hands willing to utilize the knowledge supplied. request of the Commissioner of Navigation of the Treasury ent, the publication of signal letters assigned to vessels sail- the flag of the United States, naval or mercantile, has been en in this publication.

issue of the Pilot Chart of the North Pacific was made in 1894. Its issue as a permanent publication was authorized by in the appropriation act for the fiscal year. The first regu- was published in July. 1894. The detachment of the three ho had assisted in the preparation of this July number, and ice of others to supply their places, led to the omission of for August, but since that time it has appeared regularly. whole, it may be said to be successfully established, but much ains to be done and it will be long before it reaches the plane by the Pilot Chart of the North Atlantic. This condition of due entirely to the lack of observers cruising in the Pacific

The following list exhibits the subjects of interest to mariners upon which articles have been published on the Pilot Chart of the North Pacific, the preliminary chart, issued in January, 1894, being included:

January, 1894.—Captain Karlowa's rules for the use of oil at sea, illustrated by the engraved diagram of the Hydrographic Office. The storm signals, illustrated, of Hongkong, Shanghai, and Japan.

July, 1894.—An article on Great Circle Sailing, illustrated by an orthographic projection. On the reverse side, storm signals, illustrated, for Hongkong, Shanghai, and Japan.

August, 1894.—No Pilot Chart issued.

September, 1894.—The apparent and true direction of the wind for the even points of the compass.

October, 1894.—The apparent and true direction of the wind for the odd points of the compass.

November, 1894.—Illustrated article on the Aberrations of Audibility of Fog Signals, and notes on drifting logs off the coast of California and Oregon, and on the limits of the seal fisheries. The lines marking these limits and the average storm track of the North Pacific, deduced from ten years' observations and extracted from a publication of the United States Weather Bureau, appear as permanent features of the Pilot Chart for the first time. In addition, a supplement was published to accompany this issue, extracted from the same publication, showing the storm tracks of the northern hemisphere for ten years, as determined by the International Simultaneous Meteorological Observations.

December, 1894.—Illustrated article on the use of the apparatus of the United States Life-Saving Service; list of life-saving stations on the Pacific Coast of the United States, and notes on the use of oil on the bar at San Francisco, and on some remarkable changes in the deviation of compasses.

January, 1895.—Illustrated article on the Mercurial Barometer. On the reverse side, the New Rules of the Road at Sea.

February, 1895.—Illustrated article on the Aneroid Barometer; forecast of wind and weather for February, and a note on the fishing banks of the North Pacific. On the reverse side, a table showing the positions of the fishing banks, character of fish caught, etc., and the New Rules of the Road at Sea. The location and extent of the fishing banks were indicated in green tint as a permanent feature of the Pilot Chart, as also the forecast of wind and weather. The positions of the permanent instructions, explanations. United States Weather Bureau flags, etc., as finally arranged for the engraved plate, were assigned by the hydrographer, and the engraving of the same commenced by the division of chart construction.

March, 1895.—Captain Karlowa's rules for the use of oil at sea, illustrated by the diagram of the Hydrographic Office, were repeated on this issue, with a note referring to an article on the same subject printed on the reverse side, and notes on the changes in the blank forms for recording Greenwich Noon Observations, and on the postponement of the adoption of the New Rules of the Road at Sea. On the reverse side, table of fishing banks and article on the use of oil at sea in stormy weather.

April, 1895.—Illustrated article on Typhoons, and note on the effect of excessive refraction of the sun on navigation in the Red Sea. The publication of a table showing the best equator crossings for sailing ships in the Atlantic for three months, beginning two months after the date of issue of the Pilot Chart, was commenced as a permanent feature of the same.

May, 1895.—Four globes illustrating on an orthographic projection the lines of equal magnetic variation of the earth, with explanation, and a copy of a letter from Prof. George Davidson, of the United States Coast and Geodetic Survey, regarding the currents of the North Pacific. On the reverse side an illustrated article on Typhoon Warnings in the Philippine Archipelago, and the table of fishing banks. The engraved plate was completed and used for the first time for this issue.

June, 1895.—An article on the color and visibility of lights at sea, and a table showing the drift of ocean current reports ("bottle papers") in the North Pacific. On the reverse side a list of the changes in signal letters of the United States vessels and a table of fishing banks.

July, 1895.—An article on Fog Signals, and tables showing the comparative distances in the steamer routes from Brito to Yokohama and to Hongkong, via San Francisco and via Honolulu. On the reverse side an illustration of the steamer routes mentioned above on orthographic projection and the table of fishing banks.

The Pilot Chart of the North Atlantic has been issued regularly for each month of the fiscal year, and every effort has been made to improve its character and increase its efficiency.

The following list exhibits the subjects of interest to mariners u which articles have appeared or supplements been issued during fiscal year:

August, 1894.—An illustrated article on the ice limits for August off the coa Newfoundland and a note regarding dangerous obstructions to navigation along coast. On the reverse side an article on the Gulf Stream, prepared for the Hy graphic Office by Lieut. Commander J. E. Pillsbury, U. S. N.; a supplement gi six charts illustrating the tracks of cyclones during the months of August, Sep ber, and October, for the six years, 1888 to 1893, inclusive, for the limits incl between latitudes 15° to 50° north, longitudes 45° to 100° west.

September, 1894.—An article on the destruction of derelicts and a note regar the derelict *Fannie E. Wolston*.

October, 1894.—An illustrated article on the use of the apparatus of the Un States Life-Saving Service and a note concerning the dangerous derelicts of preceding month.

November, 1894.—An illustrated article on the Aberrations of Audibility of Signals and a note concerning the dangerous derelicts of the preceding month. supplement was published to accompany this issue, extracted from a publicatio the United States Weather Bureau, giving the storm tracks of the northern h sphere for ten years as determined by the International Simultaneous Meteorolog Observations.

December, 1894.—An illustrated article on the System of Buoys and Day Marks in the waters of the United States, and notes on some remarkable changes in deviations of compasses, and on the derelicts of the month of November. A sup ment was also issued showing in six daily synoptic charts the weather condit prevailing in the North Atlantic for the six days September 28 to October 3, 1 inclusive, and illustrating the tracks and giving the general features of the cycl storms then occupying that portion of the ocean.

January, 1895.—An illustrated article on the Mercurial Barometer, and notes cerning a peculiar current reported by an observer, and the derelicts of the pre ing month. On the reverse side, the New Rules of the Road at Sea.

February, 1895.—An illustrated article on the Aneroid Barometer. On the rev side, the New Rules of the Road at Sea.

March, 1895.—An illustrated article on the System of Buoyage adopted for coast of France, and notes on the changes in blanks for recording Greenwich N Observations (Form No. 105); on the use of oil to protect ship's boats lowered at in rough weather, and on the postponement of the adoption of the New Rules of Road at Sea. On the reverse side, eight synoptic charts showing the weather ditions at Greenwich noon November 23 and 24, 1894, and for six periods four h apart during those dates, in that portion of the North Atlantic between latitudes and 52° north, longitudes 30° and 55° west, exhibiting a compound curve in track of the cyclone prevailing in that portion of the ocean, with explanations, a list of observers whose reports were utilized in the preparation of the same.

April, 1895.—An illustrated article on the Progress of Areas of Low Pressure ac the North Atlantic and notes on the removal of wrecks and derelicts in the wa of the United States; on certain wrecks destroyed by the U. S. S. *Vesuvius* an the effect of excessive refraction on navigation in the Red Sea. The publicatio table showing the best equator crossings for sailing ships in the Pacific for t months, beginning two months after the date of the issue of the Pilot Chart, commenced as a permanent feature.

May, 1895.—An illustrated article on the Cyclone off the coast of Spain and Po gal, March 10, 1895, in which the Spanish cruiser *Reina Regente* is supposed to been lost, and a note regarding ice conditions.

June, 1895.—An article on the Color and Visibility of Lights at Sea and a giving the history of the derelict bark *Birgette*, recently towed into port. On reverse side an article on Recent Accessions to our Knowledge of Ocean Curr obtained through Floating Bottles, illustrated by a chart of a portion of the At tic Ocean showing the probable tracks taken by the drifting bottles, and a t giving details of the reports; also a table showing a list of American vessel which signal letters have been assigned by the Commissioner of Navigation of Treasury Department.

July, 1895.—An illustrated article on Weather and Cloud Distribution in neighborhood of Cyclonic Storm, compiled from reports of observers for the Hy graphic Office of the cyclone of November 23, 1894, in the North Atlantic, a note on the opening of navigation in the Strait of Belle Isle, giving dates of ope the same for several years. On the reverse side an article on Fog Signals, comp from the pamphlet of Maj. William A. Livermore, U. S. A., on the subject, rece published by the Light-House Board, and twelve chartlets showing graphically fog reports received from observers by the Hydrographic Office for the twelve mo *of 1894, with* a description of the charts.

Meteorological reports have been regularly received from the following countries and provinces: Argentina, Australia, Austria, Azores, Baden, Bavaria, Belize, Bohemia, Bombay, Brazil, Canada, Cape Colony, Cape of Good Hope, Ceylon, Chile, China, Costa Rica, Cuba, Denmark, Egypt, France, Germany, Great Britain, Greenland, Guatemala, Hawaii, India, Italy, Japan, Loando, Manila, Mauritius, Mexico, New Zealand, Norway, Puerto Rico, Prussia, Roumania, Russia, San Salvador, Spain, Sweden, Switzerland, Syria, Tonga, Turkey, West Indies, and United States.

Soon after the present hydrographer assumed office, he directed special attention to improving the methods of filing, cataloguing, and averaging the hydrographic data on hand and constantly being received from observers. Investigation was made of the system for electrical counting and averaging invented by Mr. Herman Hollerith for use in connection with the last census of the United States. It was ascertained that this rapid, accurate, and economical system could be utilized for the work of the office. Much study has been given to the question in order to cover possibilities of personal error in filing, handling, and recording, and in order that steps once taken need not be retraced. Considerable progress has been made, and it is hoped that the system will soon be in complete operation.

BRANCH OFFICES.

The branch offices on the Atlantic and Pacific coasts are so fully in sympathy with the merchant marine, that their work increases and decreases with the commerce of the ports at which they are established. With the increase of work the offices are becoming embarrassed for want of space. In some cases they have a small space allotted them in the custom-house, and in others are dependent upon the courtesy of the maritime exchanges. The New York and Philadelphia offices pay a small rent for space. The New Orleans office, which has depended on the courtesy of the Maritime Exchange of that city since its establishment, has been moved into more convenient quarters in the custom-house. None of the branch offices have sufficient space, properly divided and located, for the performance of necessary work except those of Cleveland and Chicago. These latter are model branch offices, and the rooms have been placed at the disposition of the Government by the liberality of the citizens of those cities.

The statistics of the branch office work are exibited in the following table.

Very respectfully, C. D. SIGSBEE,
Commander United States Navy, Hydrographer.

The CHIEF OF THE BUREAU OF NAVIGATION,
Navy Department, Washington, D. C.

Principal work done by the branch hydrographic offices for the fiscal year ending Jun 1895.

	Boston.	New York.	Philadelphia.	Baltimore.	Norfolk.	Sa n
Vessels visited	1,668	2,128	698	1,187	383	
Barometers compared and adjusted	1,465	6,317	676	603	564	
Chronometers compared and rated	.....	13	.....	438	385	...
Charts distributed and corrected for merchant captains	.....	3,217	1,878	.....	1,720	
Light lists corrected and distributed	693	154	154	76	338	
Buoy lists corrected and distributed	.....	.....	103	.....	.....	...
General information	.....	.....	32	516	25,433	
General information to individuals	10,974	.....	35,022	7,656	2,314	
Pilot Charts distributed	3,955	10,356	3,687	2,195	1,936	
Supplements to Pilot Chart distributed	888	2,691	796	505	467	
Notices to Mariners distributed (extracts)	237,531	316,444	461,536	56,711	48,163	5
Meteorological forms distributed	.....	1,527	600	488	366	
Coast Survey Notices to Mariners distributed	1,677	70,346	.....	51,078	35,228	2
Reports on storms at sea, fog, ice, trade winds, shoals, etc., received	1,912	2,051	565	617	25	
Hydrographic Office and miscellaneous reports distributed	11,950	11,978	13,281	7,805	5,648	

	New Orleans.	San Francisco.	Portland.	Port Townsend.	Chicago.	Tot
Vessels visited	365	1,135	43	39	.....	
Barometers compared and adjusted	116	790	.....	48	35	1
Chronometers compared and rated	598	.....	.....	139	.....	
Charts distributed and corrected for merchant captains	.....	49	.....	32	70	
Light lists corrected and distributed	239	164	76	170	119	
Buoy lists corrected and distributed	.....	.....	75	.....	119	
General information	709	723	.....	691	.....	2
General information to individuals	568	4,172	801	525	3,289	6
Pilot Charts distributed	1,496	4,401	1,006	2,718	1,162	3
Supplements to Pilot Chart distributed	286	394	121	252	141	
Notices to Mariners distributed (extracts)	106,781	37,893	8,910	66,097	5,122	1,39
Meteorological forms distributed	277	2,313	145	397	351	
Coast Survey Notices to Mariners distributed	22,149	200	341	18,215	.....	21
Reports on storms at sea, fog, ice, trade winds, shoals, etc., received	53	342	31	114	147	
Hydrographic Office and miscellaneous reports distributed	1,676	685	.....	24	2,931	6

F.

ESTIMATES OF APPROPRIATIONS REQUIRED FOR THE SERVICE OF THE FISCAL YEAR ENDING JUNE 30, 1897, BY THE BUREAU OF NAVIGATION, NAVY DEPARTMENT.

FOR THE SUPPORT OF THE BUREAU OF NAVIGATION.

Salaries, Bureau of Navigation.

One chief clerk (appropriated)	$1,800.00
Two clerks of class 4 (appropriated)	3,600.00
Two clerks of class 3 (appropriated)	3,200.00
Four clerks of class 2 (appropriated)	5,600.00
Three clerks of class 1 (appropriated)	3,600.00
Four clerks, at $1,000 each (appropriated)	4,000.00
One copyist (appropriated)	900.00
One copyist (appropriated)	720.00
One assistant messenger (appropriated)	720.00
Three laborers, at $650 each (appropriated)	1,980.00
Total	26,120.00

I.—*Salaries, Hydrographic Office.*

Two clerks of class 2 (appropriated)	$2,800.00
One clerk of class 1 (appropriated)	1,200.00
One assistant messenger (appropriated)	720.00
One watchman (appropriated)	720.00
Two chart correctors, at $900 each (submitted)	1,800.00
Draftsmen, chart correctors, engravers, assistants, nautical experts, computers, custodian of archives, copyists, copperplate printers, apprentices, and laborers in the Hydrographic Office	40,000.00
Total	47,240.00

II.—*Contingent and miscellaneous expenses, Hydrographic Office.*

Purchase of furniture, stationery, copperplates, steel plates, chart paper; electrotyping copperplates; cleaning copperplates, tools, instruments, and materials for drawing, engraving, and printing; materials for and mounting charts; data for charts and sailing directions; reduction of charts by photography; photolithographing charts for immediate use; transfer of photolithographic and other charts to copper; care and repair to printing presses, furniture, instruments, and tools; extra drawing and engraving; translating from foreign languages; expert marine, meteorological, and other work in the preparation of the Pilot Chart and supplements and the printing and mailing of the same, and purchase of, compiling and arranging data for charts and sailing directions and other nautical publications, works and periodicals relating to hydrography, marine meteorology, navigation, and surveying	$30,000.00
Rent of building and rooms for printing presses, draftsmen, and engravers; storage of copperplates and materials used in the construction and printing of charts and repairs and heating of the same, and for gas, water, and telephone rates	1,500.00
Contingent expenses of branch offices at Boston, New York, Philadelphia, Baltimore, Norfolk, Savannah, New Orleans, San Francisco, Portland, Oreg., Portland, Me., Chicago, Cleveland, and Port Townsend, including furniture, fuel, lights, rent and care of offices, car fare and ferriage in visiting merchant vessels, freight, express, telegrams, and other necessary expenses incurred in collecting the latest information for the Pilot Chart, and for other purposes for which the offices were established, including $1,000 for rent of New York office	17,000.00

For a monthly Pilot Chart of the North Pacific Ocean, showing graphically the matters of value and interest to the maritime community of the Pacific Coast; and particularly the directions and forces of the winds to be expected during the month succeeding the date of issue; the set and strength of the currents; the feeding grounds of whales and seals; the regions of storm, fog, and ice; the positions of derelicts and floating obstructions to navigation, and the best routes to be followed by steam and by sail, including the expenses of communicating and circulating information; lithographing and engraving; the purchase of materials for and printing and mailing charts; the employment of three nautical experts, at $1,600 each, and two tabulators and copyists, at $720 each (appropriated) ..... $10,(

FOR THE NAVAL SERVICE.

I.—*Gunnery exercise.*

Prizes for excellence in gunnery exercises and target practice; diagram and reports of target practice for the establishment and maintenance of targets and ranges; for hiring established ranges, and for transporting to and from ranges (appropriated) $6,0

II.—*Ocean and lake surveys.*

Ocean and lake surveys, the publication and care of the results thereof; the purchase of nautical books, charts, and sailing directions, and freight and express charges on same; preparing and engraving on copperplates the surveys of the Mexican coasts, and the publication of a series of charts of the coasts of Central and South America (appropriated) ..... $14,(

III.—*Bounties for outfits for naval apprentices.*

Bounties for outfits of 750 naval apprentices, at $45 each (appropriated). $33,7

IV.—*Recruiting, transportation, and contingent.*

Expenses of recruiting for the naval service, rent of rendezvous and expenses of maintaining the same, advertising for men and boys, and all other expenses attending the recruiting for the naval service and for the transportation of enlisted men and boys at home and abroad; for heating apparatus for receiving and training ships and extra expenses thereof; for freight, telegraphing on public business, postage on letters sent abroad, ferriage, ice, apprehension of deserters and stragglers, continuous-service certificates, discharges, good-conduct badges, and medals for boys; school books for training ships, packing boxes and materials, and other contingent expenses and emergencies arising under cognizance of the Bureau of Navigation, unforseen and impossible to classify (appropriated) ..... $45,(

V.—*United States naval station, Newport, R. I.*

Naval station, Newport, R. I.: For maintenance of office of commandant, for fuel, furniture, freight, stationery, books, and other contingent expenses (appropriated) ..... $1,(

VI.—*Naval training station, Coasters Harbor Island, R. I., (for apprentices).*

For dredging channels, repairs to main causeway, roads, and grounds, extending sea wall, and the employment of such labor as may be necessary for the proper care and preservation of the same; for repairs to wharf and sea wall; for repairs and improvements on buildings, heating, lighting, and furniture for the same; books and stationery, freight and other contingent expenses, purchase of food and maintenance of live stock, and mail wagon and attendance on same, and purchase of fresh water (appropriated) $30,0

For installing water supply from city waterworks (submitted)* 25,0

For barracks, wash and bath houses, and outbuildings for apprentices (submitted) 125,0

Total 180,0

* The flow of water from the wells on the island is not sufficient and can n *increased.*

VII.—*Naval War College and Torpedo School.*

For maintenance of the War College and Torpedo School on Coasters Harbor Island and care of grounds for same (appropriated)	$8,000.00
Work absolutely necessary for the proper preservation of the cellar walls, cementing and reenforcing walls of the same; repairing roof, window casings, floors, and door casings; a water tank in attic for use in case of fire and a rain-water cistern and pumps (submitted)	2,000.00
Total	10,000.00

VIII.—*United States Naval Academy, pay of professors and others.*

For one professor of mathematics, one of chemistry, and one of physics, at $2,500 each (appropriated)	$7,500.00
For two professors (assistants), namely, one of French and Spanish and one of English studies, history, and law, at $2,200 each (appropriated)	4,400.00
For four professors, namely, one of English studies, history, and law, two of French, and one of drawing, at $2,200 each (appropriated)	8,800.00
For one assistant professor of French (appropriated)	1,800.00
For one sword master at $1,500 and two assistants at $1,000 each (appropriated)	3,500.00
For one boxing master and gymnast (appropriated)	1,200.00
For one assistant librarian (appropriated)	1,400.00
For one secretary of the Naval Academy (appropriated)	1,800.00
For two clerks to the superintendent, at $1,200 and $1,000, respectively (appropriated)	2,200.00
For one clerk to the commandant of cadets (appropriated)	1,200.00
For one clerk to the paymaster (appropriated)	1,200.00
For one dentist (appropriated)	1,600.00
For one baker (appropriated)	600.00
For one mechanic in department of physics and chemistry (appropriated)	730.00
For one cook (appropriated)	325.50
For one messenger to the superintendent (appropriated)	600.00
For one armorer (appropriated)	649.50
For one chief gunner's mate (appropriated)	529.50
For one quarter gunner (appropriated)	469.50
For one coxswain (appropriated)	469.50
For one seaman in department of seamanship (appropriated)	397.50
For one attendant in department of astronomy and one in the department of physics and chemistry, at $300 each (appropriated)	600.00
For six attendants at recitation rooms, library, store, chapel, and offices, at $300 each (appropriated)	1,800.00
For one bandmaster (appropriated)	528.00
For twenty-one first-class musicians, at $348 each (appropriated)	7,308.00
For seven second-class musicians, at $300 each (appropriated)	2,100.00
For services of organist at chapel (appropriated)	300.00
Total	54,007.00

Special course.

For special course of study and training of naval cadets, as authorized by act of Congress approved August 5, 1882 (appropriated)	$3,000.00

Pay of watchmen, mechanics, and others.

For captain of the watch and weigher, at $2.50 per diem (appropriated)	$912.50
For four watchmen, at $2 per diem each (appropriated)	2,920.00
For foreman of gas and steam-heating works at the Academy, at $5 per diem (appropriated)	1,825.00
For labor at gas works and steam buildings; for masons, carpenters, and other mechanics and laborers, and for care of buildings, grounds, wharves, and boats (appropriated)	37,864.95
For one attendant in purifying house of the gas house, at $1.50 per diem (appropriated)	547.50
For one watchman for old ordnance proving grounds, at $2 per diem (submitted)	730.00

Pay of steam employees, Naval Academy.

For pay of mechanics and others in department of steam engineering (appropriated)	$7,824.50

Repairs, Naval Academy, 1897.

For repairs and improvements, Naval Academy: Necessary repairs of public buildings, pavements, wharves, and walls inclosing the grounds of the Naval Academy; improvements, repairs, furniture, and fixtures (appropriated)	$21,0

Repairs, Naval Academy, 1896 and 1897.

For buildings and grounds,* Naval Academy: For continuing the grading and improvement of the property condemned under act making appropriations for the naval service for the fiscal year ending June 30, 1890, and the adjacent ground, and for the improvement of the water front of the Academy, to be immediately available (appropriated)	$10,00
For necessary dredging along the river front of Naval Academy, to be immediately available (submitted)	5,00

Heating and lighting Naval Academy, 1897.

For fuel and for heating and lighting the Academy and school-ships (appropriated)	$20,00

Contingent and miscellaneous.

For purchase of books for the library (appropriated)	$2,00
For stationery, blank books, models, maps, and text-books for use of instructors (appropriated)	2,00
For expenses of the Board of Visitors of the Naval Academy, being mileage and $5 per diem for each member for actual expenses during actual attendance at the Academy (appropriated)	1,50
For purchase of chemicals, apparatus, and instruments in the department of physics and chemistry, and for repairs of the same (appropriated)	2,00
For purchase of gas and steam machinery, steam pipes and fittings; rent of buildings for use of the Academy; freight, cartage, water, music, musical and astronomical instruments, uniforms for the bandsmen, telegraphing, feed and maintenance of teams, current expenses and repairs of all kinds, and for incidental labor and expenses not applicable to any other appropriation (appropriated)	32,00
For stores in the department of steam engineering (appropriated)	80
For materials for repairs in steam machinery (appropriated)	1,00
For one portrait of the fourteenth superintendent of the Naval Academy (appropriated)	10
For one steam fire engine to replace the one condemned by survey (submitted)	4,00
Total	45,40

Buildings and grounds.

For quarters for two officers and instructors—one double house† (submitted)	$15,00
For two water-closets at cadet quarters, to be immediately available, at $2,500 each ‡ (submitted)	5,00
Total	20,00

* The work of removing the unsightly hill on new grounds should be complet the earth being utilized to fill in the basin on the north side of the Academy groun the sea wall on the northwest front to be completed. The present estimate will sufficient to finish the work.

† Four houses are still required to locate officers of the Academy.

‡ The present closets used by the cadets are in a disgraceful condition—unsanit and not safe. The apparatus estimated for will be of such a character that it be employed now and later transferred to the new buildings when authorized Congress.

RECAPITULATION.

NAVAL ACADEMY.

For pay of professors and others	$54,007.00
For special course	3,000.00
For pay of watchmen, mechanics, and others	44,799.95
For pay of steam employees	7,824.50
For repairs, Naval Academy, 1897	21,000.00
For repairs, Naval Academy, 1896–97	15,000.00
For heating and lighting	20,000.00
For contingent and miscellaneous expenses	45,400.00
For buildings and grounds	20,000.00
Total	231,031.45

FOR THE SUPPORT OF THE BUREAU OF NAVIGATION.

A.– I. Salaries, Bureau of Navigation	$26,120.00
B.– I. Salaries, Hydrographic Office	47,240.00
B.–II. Contingent and miscellaneous, Hydrographic Office	58,500.00
Total	131,860.00

FOR THE NAVAL SERVICE.

I. Gunnery exercise	$6,000.00
II. Ocean and lake surveys	14,000.00
III. Outfits for naval apprentices	33,750.00
IV. Recruiting, transportation, and contingent	45,000.00
V. Naval station, Newport, R. I	1,000.00
VI. Naval training station, Coasters Harbor Island, Rhode Island	180,000.00
VII. Naval War College and Torpedo School	10,000.00
VIII. Naval Academy	231,031.45
Total	520,781.45

REPORT

OF THE

CHIEF OF THE BUREAU OF ORDNANCE.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington, D. C., October 1, 1895.

SIR: I have the honor to submit the annual report of this Bureau, and also to transmit estimates for the fiscal year ending June 30, 1897.

ESTIMATES.

(1) Fuel, tools, material, and labor, expenses of target practice, maintenance of new proving ground, modern battery for *Hartford*, reserve supply of guns and projectiles, an additional supply of torpedoes, and guns and mounts for instruction of cadets at the Naval Academy	$999,166.00
(2) General repairs to Ordnance buildings, machinery, magazines, and appendages	30,000.00
(3) Freight and miscellaneous expenses	8,000.00
(4) General expenses of the torpedo station	85,000.00
(5) Arming and equipping naval militia	50,000.00
(6) Civil establishment at navy-yards	30,024.00
(7) For new brick or stone buildings in place of present wooden ones at the magazine, Fort Mifflin, Pa	50,000.00
(8) Water supply for the new magazine at Dover, N. J	15,000.00
(9) Toward the armament of auxiliary cruisers	500,000.00
(10) Cranes, blower engines, etc., for the brass and iron foundry at the Washington Navy-Yard	65,000.00
(11) Toward the armament of vessels authorized	3,890,204.00
Total	5,722,394.00

BREECH-LOADING RIFLES.

The following table shows the present status of the main battery guns whose construction has been thus far authorized:

Caliber.	Number of guns completed to date.	Number of guns in hand partly completed.	Number of guns for which forgings have not been ordered.	Total number of guns required.	Number of guns afloat.
4-inch	68	50	27	144	64
5-inch	71	35	13	119	68
6-inch	141	0	0	141	116
8-inch	51	16	8	76	34
10-inch	25	1	0	26	18
12-inch	11	2	0	13	4
13-inch	12	0	8	20	4
Totals	379	104	56	539	308

Of the 539 guns of all calibers from 4-inch to 13-inch thus far ordered, 379 have been completed and 308 are already afloat. No change has been made in the general system of gun construction. The wire-wound system seems to have grown somewhat in favor abroad during the last year, and the English have put into service a 12-inch wire-wound gun which is said to be of higher power and yet lighter than the previous model. There are, however, numerous mechanical difficulties to be overcome with this system, and lengthy and expensive experimentation would necessarily precede its adoption for the United States naval service. The Bureau is of opinion that the advantages claimed are not sufficient to warrant the substitution of the wire-wound or any other system of gun construction at present known for that now in use.

The twelve 13-inch guns required for the *Indiana*, *Massachusetts*, and *Oregon* have been completed, and forgings for the guns of the battle ships Nos. 5 and 6 will shortly be ordered. The wisdom of the Department's decision in favor of the 13-inch caliber for the new battle ships has been conclusively demonstrated by recent armor tests at the Naval Proving Ground, where one of the side-armor plates of the *Iowa*, which had proved more than a match for the 12-inch gun, was perforated by a 13-inch shell. No argument is needed in support of the statement that a first-class battle ship should carry guns able, at least under favorable circumstances, to pierce the armor of an opponent of equal size.

The 12-inch guns of the *Iowa* are practically completed, leaving no more of this caliber to be manufactured. An improved gas check, in which a split ring takes the place of the usual gas-check disk, has been applied to the 12-inch and 13-inch guns as well as to the latest guns of 8-inch caliber. This arrangement, originally tested and adopted by the United States Army Ordnance Department, has been somewhat modified by the Bureau, with the special view of allowing its substitution for the present service gas check without other change in the breech mechanism.

All 10-inch guns authorized have been completed.

The manufacture of the 8-inch guns of the *Iowa* and *Brooklyn* has been delayed by failure of the contractors to supply acceptable forgings. The 8-inch guns for all other vessels in course of construction have been completed.

The experimental nickel-steel 8-inch gun has not yet been finished, considerable difficulty having attended its assemblage by means of the Sellers furnace. The inner jacket was put in place, after several trials, but the outer jacket, which is of great length, stuck short of its proper position, and further attempts to get it in place are awaiting certain alterations made in the furnace at Mr. Sellers's suggestion.

The 8-inch gun and ammunition therefor, upon the plans and specifications of Mr. H. P. Hurst, as authorized by act of Congress, has been manufactured and tested, and failed to give the good results claimed by the inventor. The principle of Mr. Hurst's system is that by the use of a double powder charge greater velocity can be imparted to a projectile with less pressure and consequently less shock than would be the case if a single charge were used. A small inner charge, separated from an outer or main charge, is first ignited and starts the projectile forward, and the main charge is then ignited and continues the acceleration. What results were practically attainable by this principle could only be positively determined by experiment, but the utter impracticability of the means proposed for carrying it out was manifest as soon as Mr. Hurst's first crude plans were presented. The Depart-

ment, however, decided to carry out the expressed wish of Congress and test the system, and, as required by the act, contracted for the option to purchase the exclusive right to manufacture guns and ammunition upon Mr. Hurst's system. Thereafter, as required by the act of Congress, Mr. Hurst submitted designs of an 8-inch gun and ammunition and these were manufactured at the Washington Navy-Yard, and have now been tested at the Naval Proving Ground, with the result of conclusively demonstrating the worthlessness of the system from a practical point of view.

The following statements of facts will indicate to some degree the disadvantages of the system:

(1) The gun weighs twice as much as an ordinary 8-inch gun. This is partly due to the fact that provision has been made for the conversion of the gun into a 10-inch service gun, but only a very slight reduction in weight is practicable.

(2) The cartridge case alone weighs 379 pounds, and it is difficult to see how it can be made any lighter. This makes a complete round weigh 815 pounds, as against 436 pounds for an ordinary 8-inch round with same weight of shell and of powder. Moreover, the cartridge is expensive to make, extremely difficult to load, inconvenient to handle, and presents points of weakness which would be likely to result in serious disadvantage, if not danger, in service use.

(3) The shape of the projectile is extremely undesirable from every point of view, making its manufacture difficult, its unhandiness great, and its effectiveness very small.

(4) The measured velocities given by the largest powder charges that could be gotten into the cartridge case were 2,088 foot-seconds, and 2,096 foot-seconds in the two rounds in which, by the use of very high-grade steel in the tailpieces, the projectiles were prevented from breaking up in the gun. When cast-iron projectiles were used, the tailpieces broke off, and when the tailpieces were made of ordinary mild steel they pulled off in the gun, the main body of the projectile weighing only about 150 pounds, and consequently attaining velocities ranging from 2,290 to 2,452 foot-seconds. The pressures in the rounds where the full charges were used ranged from 10 to 17.4 tons in the inner tube, and from 11.5 to 12.9 tons in the outer. The apparent anomaly of the greater pressures in the inner tube is due to the dynamic effect of the gases of the outer charge rushing down the inner tube and striking its base with high velocity, and this is one of the dangerous features of the system.

(5) In the same gun a single charge of 200 pounds gave the full weight projectile a velocity of 2,563 foot-seconds with a pressure of 17.2 tons.

(6) The Bureau is satisfied that it can obtain higher velocities with equal projectile weights in a single-charge gun of one-half the weight of the Hurst gun, at the same time dispensing with the complicated and impracticable paraphernalia of the reenforce cartridge.

When the contract was drawn up, Mr. Hurst stated that certain applications for patents Nos. 426839, 441433, and 443329 covered all the inventions and improvements to be embodied in the gun and ammunition to be tested. This Bureau had no knowledge of what was contained in any of these applications, and up to the present time but one patent, namely, No. 533171, has been issued to Mr. Hurst under these applications. This patent contains not a single feature of the slightest value to the Government, excepting in so far as its first and second claims cover the use of subcaliber apparatus for practice purposes, and these claims, as has been before pointed out by the Bureau, are worthless,

because Mr. Hurst is not the inventor of such apparatus, which were in general use many years before Mr. Hurst made his application for a patent.

As to the Hurst system lending itself well to the use of high-explosive shell, this claim is based upon a very common but fallacious idea. It is assumed that the danger of firing high explosives is due to the suddenness with which they are started forward at the first moment of ignition of the charge, and that by giving them an easy start the danger is obviated. The truth is that the force acting on the explosive is entirely due to the acceleration of the projectile, and this is proportional to the pressure in the gun, so that with equal maximum pressures there are equal risks of explosion of the projectile without regard to the projectile's position in the bore when the maximum pressure is attained. Consequently, the fact that in the Hurst gun the projectile is started easily and is moving some 200 or 300 foot-seconds when the main charge is ignited does not in the least affect the force acting on the explosive carried in the shell, which is determined at each moment solely by the pressure acting on the base of the shell at that moment.

Since there is no doubt whatever that as high velocities can be obtained with equal pressures in a single-charge gun as in the Hurst gun, it is evident that nothing is to be gained by its use in firing high-explosive shell. On the other hand, the necessary form of projectile of the Hurst gun renders it very unsuitable and dangerous for use in carrying high explosives. It is to be noted that the danger of firing high explosives from ordinary powder guns is really due to the sensitive character of the detonator necessary to properly explode the shell, and nothing is to be learned by firing shell loaded with high explosives until a suitable and safe detonator is proposed. The system which it was the purpose of the act of Congress to cause to be tested having proved itself an undesirable one for naval use, the Bureau recommended that the Hurst gun be converted into a 10-inch service rifle, and this recommendation having been approved by the Department, the conversion was begun at the Naval Gun Factory, and is now nearly completed. Copies of the reports of test of the Hurst gun and ammunition will be found on page 103.

All 6-inch guns of ordinary type have been completed. The Fletcher breech mechanism has been adopted for the 6-inch R. F. guns, after test at the Naval Proving Ground, and six of these guns are well advanced in construction. It is proposed to convert the ordinary type 6-inch guns into rapid-firing guns as rapidly as circumstances permit, beginning with the twenty Mark II guns now on board the *Chicago*, *Boston*, and *Atlanta*. Work has already been begun on the eight 6-inch guns of the *Chicago*.

All 5-inch guns previously ordered being practically finished, twenty more sets of forgings have been ordered, and these guns will be fitted with the Fletcher breech mechanism.

No 4-inch R. F. guns have been made during the year, owing to difficulty in obtaining completely satisfactory forgings. Ten new sets of forgings for this caliber have been ordered, and these guns will be fitted with the Fletcher breech mechanisn. The difference between the Dashiell and Fletcher breech mechanisms is not so great as to require men to have experience in handling each in order to work it efficiently, both systems using the slotted-screw breech plug. The Fletcher system seems to have the advantage in a less number of parts and greater power of extraction, but, on the other hand, the Dashiell system has had considerable test in service, and appears to be very efficient.

While adopting the Fletcher system for the 6-inch caliber on account of its greater power of extraction, the Bureau has decided to give the test of service use to this system in a small number of 4-inch and 5-inch guns before deciding which mechanism shall be adopted for future guns of each caliber.

The 3-inch field gun with Fletcher breech mechanism has been further tested and improved during the year, and the Bureau has decided to adopt this gun for landing and boat service.

The following table shows the present condition of the work upon secondary battery guns for both the old and new vessels:

Caliber.	Number required.	Number ordered.			Number completed.		Number afloat.	
		Hotchkiss.	Driggs.	Total.	Hotchkiss.	Driggs.	Hotchkiss.	Driggs.
37-millimeter	77	77	0	77	77	0	62	0
47-millimeter	18	18	0	18	18	0	8	0
1-pounder, light	18	18	0	18	18	0	16	0
1-pounder, heavy	154	118	15	133	118	15	68	15
3-pounder	48	38	10	48	38	10	33	6
6-pounder	352	162	140	302	162	140	115	81
Total	667	431	165	596	431	165	302	102

The necessity of creating a reserve supply of guns of all calibers was pointed out in last year's report, and the recommendation then made—that the construction of an additional number, equal to 10 per cent of those already authorized, be commenced at once—is renewed, and an estimate therefor is herewith submitted.

BROWN PRISMATIC POWDER.

The Bureau has as yet failed to secure a completely satisfactory powder for the 13-inch guns, no sample submitted having given the required velocity without exceeding the allowed pressure.

Several lots of 12-inch powder have been accepted, but the Bureau has been forced to reduce its requirements for 12-inch and 13-inch guns of 35 calibers length of bore to 2,000 foot-seconds muzzle velocity and 15 tons pressure, results which are attained with 6-inch and 8-inch guns of 30 calibers length of bore.

The California Powder Company has succeeded in manufacturing excellent powder for the 8-inch as well as for the 5-inch guns, and is now in a position to make prismatic powder for all calibers. Lack of means of testing powder in the larger guns on the Pacific Coast, with the consequent necessity of shipping samples to the Naval Proving Ground here for test, prevents the Bureau from ordering powder for the 10-inch, 12-inch, and 13-inch guns from this company at present.

The difficulty of obtaining a satisfactory brown powder for the larger calibers, as well as the many inconveniences attendant upon the use of brown powder, emphasize the importance of developing a smokeless powder for all calibers.

SMOKELESS POWDER.

The experimental manufacture of a gun-cotton powder at the Naval Torpedo Station has reached a point justifying its issue to service, and accordingly as a first step the Bureau has put 500 rounds of 6-pounder ammunition loaded with smokeless powder on board the ships of the North Atlantic Squadron for use in target practice.

The two main problems upon the solution of which the successful production of a smokeless powder depends are (1) to make a powder which will keep; (2) to reproduce results at will, so that successive lots may give uniform ballistic results. The second of these problems, it is believed, has been completely solved, and the Bureau is confident that when a successful sample of powder has been made for any caliber it can be reproduced indefinitely. As regards keeping qualities, the test of time and service alone will show whether success has been attained in this direction. As far, however, as exposure to excessive temperatures without resulting change is a measure of stability, the tests made at the torpedo station indicate that nothing is to be feared on this score.

During the year a large number of samples of smokeless powder for the Navy small arm have been tested, and most of these have given high ballistic results, but the behavior of those powders which contained nitroglycerin has in every case tended to confirm the Bureau's previously expressed preference for a pure gun-cotton powder. The excessive heating and erosion of the gun barrel is one very serious objection to nitroglycerin powders, at least to those containing any considerable percentage of nitroglycerin. Moreover, many things indicate that with these powders the measured chamber pressures are not a true index of the pressures along the bore, several cases of permanent extension of the bore of guns having been observed with low chamber pressures. The Bureau considers that the results which it has obtained from its own pure gun-cotton powder in the small arm are as good as can be reasonably expected, and it proposes to adopt this powder for service use, with the requirement of 2,450 foot-seconds velocity and not over 45,000 pounds per square inch pressure. Both powder companies stand ready to undertake the manufacture of smokeless powder upon the Bureau's plans, and it is expected to place orders for this powder with them in the near future.

GUN MOUNTS.

The installation of the *Olympia's* turret mounts was completed during the year, and since the ship has been commissioned satisfactory reports have been received as to their performance.

The *Amphitrite* has had target practice twice since being commissioned. Some inconvenience was experienced at first with leaky joints due to defective packing, but on the second occasion, when this defect had been remedied, the mountings were reported to be extremely satisfactory.

The *Texas* was commissioned August 14, although her turret equipment had been in readiness for some weeks before that. She is the only vessel in the Navy having single gun turrets and fixed loading stations. So far as preliminary tests will show, her turret machinery will enable her guns to be served quickly and efficiently.

The installation of the *Maine's* turret mounts was completed August 1, 1895.

The installation of the entire main battery of the *Indiana* has been completed.

Two of the 13-inch mounts of the *Oregon* have been shipped to the vessel and are being installed, and the other two are completed and will be shipped at once. The 8-inch mounts are nearly completed.

The work on the turret mounts for the *Massachusetts* is progressing rapidly, and the Bureau counts upon being able to ship them a considerable time before she is ready to receive them.

The *Puritan's* 12-inch turret mounts have been completed for more than a year and only await the construction work of the ship to proceed, when the installation will be begun.

The *Monadnock's* mounts have been completed and are being installed at the Mare Island Navy-Yard.

So far as the work of this Bureau is concerned, the *Terror* is ready to be commissioned.

The work on the 12-inch mounts of the *Iowa* has been delayed about a year by changes made in the shape and dimensions of the turrets. It is hoped, nowever, that her gun mounts will be ready for her as soon as she is ready to receive them. Her 8-inch mounts, as well as those for the *Brooklyn*, have been delayed by changes in the turrets, but will be ready before either of the ships will be far enough advanced to allow the work of installation to be begun.

The type of hydraulic turret gun carriage that has been adopted for nearly all of our ships is exemplified in the mounts that have now been successfully in operation in the *Monterey* for two and a half years.

The latest target report from that vessel shows that the 10-inch guns were fired at the rate of 2¾ minutes and the 12-inch guns at the rate of about 4 minutes per round. This speed was the average of four shots from each gun, subject to the usual delays of waiting for orders to fire, etc., the ship being in a seaway and the shots all carefully aimed. Although these results are very gratifying, the numerous improvements introduced by the Bureau from time to time lead it to hope for still better speed in the later ships.

All 6-inch Mark III and IV mounts have been completed and are now being installed in the battle ships *Indiana*, *Massachusetts*, and *Oregon*, the last vessels to receive this type of carriage.

Six-inch rapid-fire mount Mark V is undergoing trials at the Naval Proving Ground, Indian Head, Md.

An experimental mount, Mark V, for the 5-inch R. F. gun is still in process of construction.

The 5-inch mounts for the *Lancaster* are finished and installed. The Bureau has been greatly embarrassed in the completion of these mounts by the inability of contractors to supply the castings on time.

A new pedestal mount for the 4-inch R. F. guns has been designed.

Orders have been placed up to the present time for sets of steel castings for gun mounts as follows:

Steel castings for gun mounts.

Caliber of gun.	Required.	Ordered.	Delivered.	Due.	Still to be ordered.
	Sets.	*Sets.*	*Sets.*	*Sets.*	*Sets.*
4-inch	144	77	77	0	67
5-inch	117	68	68	0	49
6-inch	119	109	104	*a* 5	10
8-inch	66	58	47	*a* 11	8
10-inch	15	15	15	0	0
12-inch	13	8	8	0	5
13-inch	21	13	13	0	8
Total	495	348	332	16	147

a Parts of.

The following table shows the status of mounts required for new armaments:

Status of mounts for new armaments.

Caliber.	Required.	Completed.	In course of completion.	Not yet commenced.
4-inch	144	69	8	67
5-inch	119	70	0	49
6-inch	140	124	6	10
8-inch	74	34	16	24
10-inch	*a* 23	*a* 22	1	0
12-inch	13	8	0	5
13-inch	21	7	6	8
Total	534	334	37	163

a Includes mounts built by contract for four guns of the *Terror*.

A book describing all gun mountings in use in the Navy has been prepared and issued to the service.

A circular on the care and preservation of gun mounts is also being prepared. The supreme importance of keeping the ordnance outfits of ships in the most efficient condition all the time can not be too much insisted upon.

GUN SIGHTS.

One of the most serious problems connected with the operation of turret guns is the question of sighting them accurately. The Bureau has developed a simple system of sighting them by means of telescope sights. Preliminary tests of this system on shore gave promise of good results when mounted on board ship, and the Bureau's expectations have been fully realized in the target practice of the *Amphitrite*, the first vessel provided with the device. Telescopic sights have also been fitted to guns other than those mounted in turrets, and the reports from ships whose guns are thus fitted having been satisfactory, the Bureau proposes fitting all the larger rapid-fire guns with these sights in lieu of the usual bar sight.

MODERN BATTERIES FOR OLD VESSELS.

Since the last report the *Alliance* and *Lancaster* have been fitted with modern batteries, the former with six 4-inch rapid-firing guns, four 6-pounders, and two 1-pounders; and the latter vessel with twelve 5-inch guns (of which ten are rapid firing), two 6-pounder, two 1-pounder, and two 37-millimeter revolving cannon.

If the exigencies of the service will permit the *Lancaster* to be used as a gunnery training ship (the purpose for which she is intended) much good will accrue to the service.

Plans for a new battery for the *Hartford*, to consist of thirteen 5-inch rapid-firing guns, four 6-pounders, and two landing guns, have been approved, but, although appropriations have been made for repairing the hull of this vessel, no money has as yet been allowed by Congress for commencing work on a modern battery for her. An estimate for this has been again submitted this year.

PROJECTILES.

The contract for the 13-inch steel shell referred to in the last report was awarded to the Sterling Steel Company, and during the year the entire number of these shell, 400, has been delivered, every lot meeting

the requirement that a selected shell therefrom should pass unbroken through a 7-inch nickel steel armor plate. These shell carry a bursting charge of 50 pounds of powder.

At the request of the American Projectile Company, of Lynn, Mass., the contract with that company for 8-inch, 10-inch, and 12-inch wrought-steel shell was canceled, it having been found that shell of these calibers are beyond the capacity of their present plant. In lieu of this contract, the 10-inch and 12-inch shell not being required for ships already authorized, the Bureau contracted with the United States Projectile Company, of Brooklyn, N. Y., for 3,000 8-inch forged-steel shell, the requirements being that they should pierce a 4-inch steel plate without breaking or cracking so as to open the powder chamber. These shell will carry a bursting charge of 12 pounds of powder, and are similar in design to the 13-inch shell above referred to. It is proposed to develop a similar type of semiarmor-piercing shell for each caliber.

No other orders have been placed for armor-piercing or common shell for the larger guns during the year, and all outstanding orders and contracts have been filled excepting the above-mentioned one for 8-inch steel shell.

As far as projectiles for the minor caliber rapid-fire guns are concerned, the Bureau has placed an order for 32,000 6-pounder steel shell with the United States Projectile Company, of Brooklyn, N. Y., at a considerably lower price than has hitherto been paid for this class of projectiles, and if orders for the 1 and 3 pounder steel shell can be placed at similar reductions in price it is proposed to abandon the use of cast-iron projectiles for these guns, as has already been done with the larger calibers, and to use steel shell only.

The Bureau renews its recommendation of last year that an appropriation be made for the purchase of reserve projectiles of all calibers, and an estimate therefor is herewith submitted.

No further experiments have been made with high-explosive shell. The Bureau is satisfied that no difficulty will be found in furnishing shell of all calibers loaded with gun cotton which can safely be fired from powder guns with high velocities and detonated on impact, but, for the present at least, it is believed that powder charges are the best for exploding shell.

The following tables show the condition of projectiles ordered and delivered to this date:

Armor-piercing shell.

Caliber.	Ordered.	Delivered.	Due.
4-inch	2,108	2,108	0
5-inch	1,365	1,365	0
6-inch	2,209	2,209	0
8-inch	1,959	1,959	0
10-inch	1,134	1,134	0
12-inch	543	543	0
13-inch	504	504	0
Total	9,822	9,822	0

Steel common shell and shrapnel.

Caliber.	Shrapnel.		Shell.	
	Ordered.	Delivered.	Ordered.	Delivered.
4-inch	2,000	2,000	35,268	35,268
5-inch	2,000	2,000	18,000	18,000
6-inch	3,000	3,000	17,377	17,377
8-inch	.....	.....	3,000	None.
10-inch	.....	.....	1,206	1,206
12-inch	.....	.....	454	454
13-inch	.....	.....	400	400
Total	7,000	7,000	75,705	72,705

A book describing all ammunition in use in the Navy is in course of preparation and will shortly be issued to the service.

ARMOR CONTRACTS.

Since the date of the last report 5,171.89 tons of armor have been delivered, of which 4,861.73 tons were Harveyized. The Harveyized armor includes the remainder of the 18-inch side armor of the *Indiana;* all that of the *Oregon* and *Massachusetts*, except the shutter plates of the latter vessel; the 14-inch side armor, except shutter plates, and 12-inch diagonal armor of the *Iowa;* the 12-inch side of the *Texas;* the 13-inch B. L. R. turrets of the *Indiana;* the 12-inch B. L. R. turrets of the *Puritan;* the 10-inch B. L. R. turrets of the *Monadnock* and *Maine;* two of the 8-inch B. L. R. turrets of the *Indiana*, and all of those of the *Massachusetts*, *Oregon*, and *Brooklyn;* the 13-inch B. L. R. barbettes of the *Oregon;* the 8-inch B. L. R. barbettes of the *Brooklyn* and *Iowa.* The un-Harveyized armor includes the conning towers and tubes of the *Katahdin*, *Texas*, *Massachusetts*, and *Indiana*, and a part of the *Puritan's* side armor.

The contracts of June 1, 1887, with the Bethlehem Iron Company, and of November 20, 1890, with the Carnegie Steel Company, have been completed, while the armor which remains to be delivered on the contracts of February 28, 1893, and March 1, 1893, consisting as it does of the classes most difficult and tedious to manufacture, will assuredly be delivered in the case of the Carnegie contract before February 1, 1896, and in the case of the Bethlehem contract early the following July. This delivery is dependent, however, in certain cases, upon the promptness with which the necessary detail plans of this armor are supplied by the constructors of the hull of the *Iowa.*

The past year's output of armor by no means represents the capacity of the plants, for important departments in both establishments have been practically shut down for considerable periods while awaiting the plans. In addition, the Bethlehem Iron Company has an armor-rolling mill nearing completion which will greatly increase the forging capacity of that establishment. As it has been decided to reduce somewhat the thickness of the heaviest armor carried by the new battle ships, while experience has indicated how its manufacture may be simplified, it is believed that the entire amount required for battle ships 5 and 6, estimated at 7,800 tons, can easily be supplied in less than one year after the receipt of the plans. Doubtless economy in manufacture will require a somewhat longer time, unless armor orders are received in sufficient amount to keep the shops working full. In fact, at the present time, in spite of delays in the receipt of the armor plans, all of the structural

armor for the *Iowa* will be delivered months before that vessel is launched.

While, however, the number and capacity of the works capable of building the hulls and engines of vessels of war in this country is now quite large, and can be rapidly extended to meet increased demands, this is not the case with regard to the armor plants. Skilled labor of the character employed by the latter is limited to that actually engaged on Government contracts, which is not the case with regard to the building of hulls and engines. Once the armor makers' labor is scattered, new men must be trained at great expense and delay. It is apparent, therefore, that while in case of a sudden and large increase in the demand for war ships the hull and engine builders would be able to respond, the simultaneous demands for armor of the same character and position on the ships as the building of the hulls progressed would assuredly cause great delays. It is therefore regarded as most important, so long as the programme for the increase of the Navy remains uncompleted, that the authorization of additional armored ships be regular and continuous, and in this respect it is believed that the extensive armor experimentation carried on in this country has clearly indicated the direction in which development and improvement in resistance is to be expected, so that nothing in this respect will be gained by delaying the authorization of additional ships, especially as it will require nearly a year to formulate and place new armor contracts.

The proposition to contract with the shipbuilder for the armor as well as for hull and machinery of ships does not meet with the Bureau's approval. While not intending to advocate anything that savors of paternalism, the Bureau feels that the Government has an interest in the two armor plants. In the report of the Secretary of the Navy for 1887 the statement is made that "the contracts for armor and gun steel are made at prices within 25 per cent of the European price for the similar article, not greater than the difference in labor between the two countries, notwithstanding the heavy outlay for plant (estimated at $2,500,000) necessary to be made to undertake the contract."

It is evident, therefore, that for the purpose of establishing these great industries and widening the field in this country for skilled labor, more money has been paid for the armor of our battle ships than would have been necessary had the alternative of securing it abroad been considered. The view that should be taken is still wider than here represented, quoting again from the report of the Secretary of the Navy for 1887: "My attention was early called to the fact that our shipbuilders were shut out from building for any foreign Government by reason of the fact that neither armor nor gun steel nor secondary batteries could be supplied in this country." The maintenance of the armor plants is therefore a necessary condition of the employment of American labor and material on contracts for foreign men-of-war.

While not desiring to insinuate that the shipbuilders would fail to hold the interests both of labor and material which have been gathered around the great armor plants as kindly as the Government, the Bureau is impressed with the idea that the transfer of over $3,500,000 of Government money, with all the power it conveys over these institutions, to the hands of a private corporation can not but be regarded with alarm.

It is moreover believed that the Department will have no difficulty in forcing the price of armor down to a point allowing no more than a reasonable profit to the maker without jeopardizing the maintenance of both establishments.

The following table summarizes the present condition of the contracts for the armor of the different ships at Bethlehem and Carnegie:

Armor still to be delivered October 1, 1895.

Vessel.	Description.	Amount to be delivered.				Remarks.
		Carnegie.		Bethlehem.		
		Number of plates.	Weight.	Number of plates	Weight.	
			Tons.		*Tons.*	
Puritan	Conning tower			1	22.72	Ready Dec. 1, 1895.
Iowa	8-inch turrets	12	154.13			Plans received July 16, 1895.
	8-inch turret tops		10.50			Awaiting final plans; preliminary plans received July 16, 1895.
	12-inch barbettes	14	430.55			Awaiting final plans. Preliminary plans: Forward barbette received July 5, 1895; after barbette Aug. 13, 1895.
	12-inch turrets			10	448.51	Awaiting final plans; preliminary forging plans received July 26, 1895.
	Ammunition tubes			4	50	Ready Nov. 1, 1895.
	Conning tower			1	28.70	Do.
	4-inch casemate	4	.16			Plans received Aug. 12, 1895.
	Side armor	2	54			Shutter plates awaiting final dimensions.
Oregon	13-inch turrets			12	287.36	6 ready October, 1895; 6 ready December, 1895.
Massachusetts	do			12	287.36	6 ready Jan. 1, 1896; 6 ready March, 1896.
	Side armor			2	72	Shutter plates awaiting final dimensions.
Brooklyn	Conning tower			1	20	Ready Nov. 1, 1895.
	Ammunition tubes			4	50	Ready Dec. 31, 1895.
Total			665.18		1,266.65	

Summary of armor deliveries to October 1, 1895.

	Carnegie Steel Company.	Bethlehem Iron Company.	Total.
	Tons.	*Tons.*	*Tons.*
Armor delivered to Oct. 1, 1894	5,315.32	6,533.28	11,848.60
Armor delivered since Oct. 1, 1894	2,885.45	2,286.44	5,171.89
Armor still to be delivered	665.18	1,266.65	1,931.83
Total	8,865.95	10,086.37	18,952.32

ARMOR DELAYS.

Serious delays in the completion of the ships have been ascribed to the slow delivery of armor in the past. When it is understood that the effort has been made to satisfy the almost simultaneous demands for the armor of fifteen ships whose authorization by Congress covered a period of ten years, and that this has been practically accomplished in a little over four years, even while the plants were being erected and labor trained, the enterprise and vigor of the manufacturers is worthy of praise rather than censure.

Their difficulties have been exceptional. The material employed is one with which no previous experience had been elsewhere obtained; and despite the fact that the dimensions and weight of the heaviest

ates exceed considerably those manufactured for any other navy in ıe world a process surrounded by difficulties pronounced insurmount- ›le by many of the most prominent engineers in this and other coun- ies has been successfully developed and applied. It may now be stated ith conviction that the time of the delivery of the armor for any prob- ›le number of ships authorized at one time in the future will rest in ıe hands of the contractors for the hull and be dependent solely upon ıe promptness with which they supply the necessary details for the fit nd securing of the individual plates. Even now the armor makers, ·ith reason, complain of losses they have suffered through enforced lleness while waiting the detailed drawings of about 1,350 tons of rmor for the *Iowa* and *Brooklyn*. These drawings were issued in 1893 ınd 1894, but owing to a contemplated change in the design of the tur- ets and barbettes were withdrawn and the work stopped for over one ·ear. Nevertheless, all of the armor of the *Iowa* has been delivered, with the exception of that thus delayed and about 45 tons of the diagonal armor finished some months ago but awaiting the correction of errors in the original plans.

It is but fair to state that although the altered designs referred to call for plates of greater dimensions and difficulty of manufacture than those described in the original contract, while the aggregate weight and corresponding compensation is less, the manufacturers have accepted the modifications without demur other than that the size and weight of individual plates should not exceed the capabilities of their plants.

The manufacture of modern armor is necessarily a slow process, and if the Government is to have its interests safeguarded the detail plans should be furnished in time to permit its careful manufacture, thorough inspection, and replacement if rejected, without delaying the construction of the ship itself. For this reason changes in design affecting the armor are to be deprecated, and their necessity should be plainly apparent before the proposition is allowed serious consideration. The allowance of sufficient time for the manufacture is one of the most essential conditions toward insuring that the Government will get just as good armor as it pays for, otherwise pressure will inevitably be brought to bear upon the Department by the shipbuilders, who will complain of enforced delays and the resulting penalties through delay in supplying armor.

On the other hand the Government has immediate need of the ships. The tendency would therefore be when pressed for time to allow the incorporation of armor which, however conscientiously made, could not be proven to be fully up to the required standard without exhaustive tests and carefully considered experimentation. In such cases the duty of this Bureau has required great firmness and the exercise of most careful judgment, in order to avoid working hardship both upon the manufacturers, by rejecting suitable material for purely technical reasons, and upon shipbuilders, by causing them delay through holding back armor of doubtful quality. It is therefore recommended that in future contracts for the hull the shipbuilders be required to supply final detail plans of the armor in sufficient quantity and time to permit its proper and economical manufacture before being required on the ship.

The high temperature required in the application of the Harvey process, has in itself caused considerable loss to all of the manufacturers as well as most vexatious delays in delivery of armor. Portions of the 13-inch B. L. R. turret plates for the *Oregon* and *Massachusetts* and several side armor plates for the latter ship were oxidized over considerable areas through the admission of air while in the Harvey furnace, this

defect not being discovered until the plates were practically completed and the attempt made to harden them. This has been the cause of several months' delay. Certain plates for one turret have had the defects removed, the plates being shortened and the length thus lost being made up by adding an extra plate to the turret. This proceeding, although reducing the inertia with which individual plates resisted impact, was unanimously approved of by the Board of Construction as in the Government's interests, through avoiding the great delay which would have resulted from the manufacture of new plates. In the case of two other large plates, the defects were such as necessitated their rejection.

FITTING FRAMES TO ARMOR.

The irregular distortion of face-hardened armor can not invariably be foreseen and provided against. However, by increased care and skill in manufacture it has been brought to a minimum; in fact, the builders of the *Oregon* have expressed gratification at the neatness of fit and ease with which the side armor of that ship was fitted into place while that of the *Indiana* now presents as good a surface as oil tempered armor.

It is in the interests of the contractors for the hulls to insist that the armor should conform in shape to a certain limited tolerance in order to permit the various structures and frames to be constructed before the armor is made.

The armor most difficult to shape, since the curvature is large and in the latest designs variable, is that for the turrets, the structures of which are built apart from the ship and need in nowise affect its completion. The Bureau has represented to the Department the impossibility of fixing a narrow tolerance for the shape of such armor, since a good plate but slightly exceeding such a tolerance might have its resistance impaired by softening or straining it in the attempt at rectification. It has been deemed advisable, therefore, to consider each individual plate on its own deviations and requirements, firmly believing that in the interests of expedition and improved resistance all turret structures should be built to conform to the shape of the completed armor, the butts of the latter being of course faced and well fitted. This may be claimed to inflict hardship upon the contractors for the hull, since the turret structures might otherwise be completed in their yards and partial payments made upon them long before the ship is sufficiently advanced to receive them.

The building of these structures, however, is not at the time necessary to advance the work on the ship, and in fact the ship is completed no earlier in consequence, for when the structure is not made to conform to the shape of the armor the irregularities in the latter necessitate a similar variation in the length of the bolts which secure it, a special bolt being necessary for each location. The lengths of these bolts can not be determined before the armor is fitted into its position on the ship, and there then ensues a vexatious delay of some weeks, during which time special drawings and schedules are prepared from which the required bolts can be made. This is all the more annoying as it occurs at the time when the ship is practically completed and affords the shipbuilder an opportunity to account for delays by the non-receipt of armor bolts. As the experimental 13-inch B. L. R. turret structure of the *Massachusetts* was contracted to be completed in one month, at a time when it was difficult to place small orders for the

necessary material, and as the fit and shape of the armor affects only a portion of the turret structure, it is believed that just as much time is lost in obtaining the special bolts required as is gained by the completion of the turret structure before the arrival of the armor. The great advantage of having all armor bolts in the turret of a uniform type and dimension and delivered with the armor is obvious. The ease and rapidity with which bolts damaged in action could then be replaced is also a very important reason.

As the armor plate, however, costs the Government many times as much as the structure to which it is secured, and the resistance of this most important of all protection depends upon the soundness of the individual plates and the solidarity of the armor butts rather than the relatively flimsy frames to which it is secured, it is strongly recommended that in future contracts it be expressly stipulated that the frames of turrets and barbettes be constructed to fit the armor after it shall have been received.

In the case of side and diagonal armor, where the resistance of the entire structure of frames, beams, and protective deck supports the flat plate rather than its abutment upon the adjacent plates, as in circular structures, a considerable variation in shape from that required may be taken up by fitting the wooden backing to conform to the plates. It has been proposed, much on the same plan, to fit a very thin wooden backing to all turrets in order to permit a bearing to be easily obtained over the entire inner surface of the armor plates.

This wood of itself has no measurable resistance, while its weight as well as that due to the increased circumference of enveloping armor is wholly objectionable and can be avoided by making the frames fit the armor, thus reducing the cost, weight, and size of these most expensive structures. For example, by increasing the diameter of the original design of the *Iowa's* 12-inch B. L. R. turrets 5 inches in this manner the actual weight of armor added would be about 3 tons, without counting the additional row of armor bolts and numerous rivets which would thus be made necessary. The weight of the teak backing itself, without counting the backing bolts, would be 3.5 tons, so that, including the increased size of frames, the actual weight thus added to the structure would be about 7 tons, and the cost to the Government of the additional armor and bolts required fully $3,000. The actual cost of the frames fitted to the armor in the most aggravated cases of distortion should not greatly exceed this.

TEMPLATES.

The use of templates for armor, as supplied at present, is unnecessary. They are a source of great expense and trouble, and almost invariably differ materially from the original drawings according to which the armor has been made, thus causing annoyance through delay and expense in making alterations. They, in fact, serve the shipbuilders as a means of revising the original plans to conform to discrepancies which have been permitted to creep into the structure of the hull. The shipbuilder should be held as rigidly to the detailed plans of armor as the armor makers, in which case the original drawings furnish all necessary information.

BACKING.

In this connection the Bureau has made numerous experiments against ballistic and experimental plates which were supported either only at the edges without backing or with various thicknesses and

arrangements of wood and steel skin plates up to 48 inches in thic ness. The results of these tests have demonstrated that if the actu weight of the backing was assigned to an increased thickness of arm the resistance would be increased. In the case of armor at the wat line, however, the necessity of water-tightness and the undesirability altering the shape of the frames makes a backing necessary.

BOLTS.

The present type of armor bolts is the same as that adopted in secu ing the first armor made for the new ships, and is believed to be mo costly and complicated than necessary. It has been recommended t this Bureau that a board for the purpose of the revision of armor faste ings generally be appointed. This has been done and the matter is no under consideration. This subject is especially important in the ca where the structure can not be made to conform to the shape of t armor, as in the case of side armor, where backing is necessary and whe the irregularities in the plates necessitate a similar variation in t length of the bolts.

EXPERIMENTAL TESTS.

A number of experimental armor plates have been brought to t Bureau's attention by inventors, and when the process has exhibite sufficient novelty with a reasonable possibility of its successful deve opment the plates have been tested at the Government's expens The number of inventors who have devoted their attention to arm appears to be increasing, and many of them have the impression th this Bureau is provided with a fund for the development, manufactur and test of any invention brought to its attention.

The Carnegie Steel Company in the effort to improve the quality its armor with special regard to thick plates has also offered a numbe of plates each exhibiting variations in the manufacture and treatmen The Government has been put in possession of all the details of manu facture of these experimental plates, and the tests indicate the possi bility of a decided gain in resistance. In this way has been gained th benefit, under a great variety of conditions of velocity, angle of impact and projectile, of the test of nearly 70 tons of armor.

A decided advance has also been made by this company with regard to the treatment of thick face-hardened plates. These, while neces sarily obtaining less benefit at the center of the mass from the forging are exposed to the high temperature in the process of cementation fo a much longer period than thin plates, and this, when followed as usua by slow cooling, tends to return the metal to somewhat of its conditio when cast. This is one of the most important reasons why it has bee impossible to obtain very thick armor which will possess a resistanc compared with that of thin armor even approximating its proportion ately increased weight and cost. The improvement in thick plate above referred to consists of forging the plate to a thickness somewha greater than that required before carbonizing it, after which the plat is reduced to its final thickness by a method securing its greatest con densation, the second forging having the effect of remedying the defect introduced in cementation and otherwise greatly improving the meta This process was tried at the suggestion of the Bureau in 1891 and 189 but failed at that time to show any marked advantage, the plates bein insufficiently carbonized at the start and being unable to stand th *further* loss of carbon produced by the subsequent heating.

EXPERIMENTAL TURRET.

The conviction of this Bureau has been that the circular turret structures to which the armor is attached can not be made of themselves a sufficient support to the armor against impact, and that the solidarity of bearing of adjacent plates, with butts free from liners or fitting pieces, is absolutely essential to enable the armor to stand up against blows the energies of which would be unequal to the penetration of the plate if rigidly supported. This opinion had led to its persistent insistence that the structures should be built to fit the armor, adjacent plates being made mutually supporting. It has been felt, however, to be a necessity to demonstrate that even with the mutual support of the plates the integrity of the entire structure will not be seriously impaired by blows which it is known that the individual plates, supported as they are on the proving ground, are able to withstand.

Upon the suggestion of this Bureau, the construction of an experimental 13-inch B. L. R. turret structure, similar in all respects, with regard to strength and rigidity, to the regular service turrets, for the *Indiana* class of battle ships has been authorized. It is the intention to secure to this structure the armor for a service turret with the exception of one plate—that plate being the ballistic plate representing the group—and then set up the structure at the proving ground, where it will be subjected to test.

An important test of the same character, the object of which was to determine the ability of the side structure of the *Iowa* to withstand the heaviest blows that the armor could resist, has also been made. At the same time certain modifications in the way of simplification of the bolts and their appurtenances used in securing this plate, which had been suggested by the Board on the Revision of Armor Fastenings, were made. The armor employed in this test was that actually representing the *Iowa's* side. It was, therefore, possible, at a comparatively small increased expense over the usual ballistic test, to obtain much valuable information concerning the efficiency of the armor support and various types of bolts and fittings.

The result of this test was highly satisfactory, showing that the structure behind the belt armor was abundantly able to support it. The lighter and simplified bolts were also proven to be all that was required to hold the armor in position.

LIGHT SHIELDS.

The Bureau has been impressed with the idea that the improvement in the manufacture of steel rendered the shields now provided for the secondary battery guns more resistant than was necessary to afford protection under all circumstances against projectiles up to and including the 1-pounder, while they would be unable to resist heavier calibers under any of the circumstances likely to arise in battle. A series of trials has therefore been instituted of shields one-third lighter in weight than the service shields in the hope of obtaining equal efficiency with less weight, or in some instances a greater area of protecting surface with the same weight. Shields of various steel alloys, varying in thickness from one-fourth to three-fourths of an inch, have been obtained from the Bethlehem Iron Company, the Carnegie Steel Company, the Midvale Steel Company, the Brooklyn Chrome Steel Company, and Park Bros. & Co. In addition, a number of experimental

shields have been offered for test by the Carnegie Steel Company, Sterling Steel Company, and individual inventors.

The variety of shields tested has been very extensive, embracing several different alloys each of chromium, nickel, and manganese, while the treatment has varied through many stages from simple annealing to face-hardening. The tests have also had for their object the relative resistance offered by rigidly supported and elastic plates when their surfaces were offered at various angles to the impact of the projectiles. The thinner plates have also been employed in connection with determining the ballistic features of the new 6-millimeter rifle. Much valuable information has thus been obtained, and, although the tests are as yet uncompleted, it is expected to obtain a nickel steel plate of special composition and treatment which will be fully equal in resistance to the old plate and 17 per cent less in weight.

PROTECTIVE DECKS.

Considering the great importance which is laid upon the resistance afforded by the protective decks of our men-of-war, and that no attempt has been made to determine the actual protection afforded from the inclined impact of heavy calibers by such structures since 1891, the Bureau has deemed it necessary to make a number of experiments with improved material. The result has been very gratifying, it being found that material can now be furnished suitable for the heavier protective decks which, although having approximately the same characteristics, as shown by test specimens, as the material supplied for the earlier ships, has a far greater ballistic resistance. Inasmuch as the ballistic resistance of the protective decks is of so vital importance to the protection of the machinery spaces and magazines of our war ships, it is recommended that a ballistic requirement, to be established by the experiments of this Bureau, may be incorporated in the contracts, as is customary with certain maritime powers abroad.

GUN-FORGING CONTRACTS.

During the year orders have been placed with the Bethlehem Iron Company for twenty sets of 5-inch and ten sets of 4-inch gun forgings. Forgings for thirteen 5-inch and twenty-seven 4-inch guns have also been advertised for and will be ordered when bids are received.

The Midvale Steel Company is still engaged in replacing certain 4-inch and 8-inch gun forgings supplied under an old contract and found, in course of machining, to be defective.

There remains to be ordered eight sets of 13-inch and eight sets of 8-inch gun forgings to complete the main batteries of all new vessels authorized by law, and these will shortly be advertised for.

The Bureau, however, earnestly renews its recommendation that money be appropriated for the purchase of forgings for and the construction of a reserve supply of guns.

The following table shows the number of sets of forgings of each caliber thus far delivered and still due, including eight sets of 8-inch and three sets of 10-inch forgings purchased abroad before the establishment of suitable gun-forging plants in the United States:

Gun forgings.

	4-inch.	5-inch.	6-inch.	8-inch.	10-inch.	12-inch.	13-inch.	Total.
Required	144	119	141	76	26	13	20	539
Ordered	117	106	141	68	26	13	12	483
To be ordered	*a* 27	*a* 13	0	8	0	0	8	56
Delivered:								
Purchased abroad	0	0	0	8	3	0	0	11
By Midvale Company	*b* 65	*b* 27	84	32	0	0	0	208
By Bethlehem Company	50	73	57	28	23	13	12	256
Not delivered:								
By Midvale Company	(*b*)	0	0	(*b*)	0	0	0	0
By Bethlehem Company	2	6	0	0	0	0	0	8

a These have already been advertised for, bids to be opened October 3, 1895.
b Several have been rejected and have to be replaced.

ARMAMENT OF NEW VESSELS.

During the year the batteries of the *Maine*, *Texas*, *Amphitrite*, *Minneapolis*, and *Olympia* have been completely installed and tested by firing with satisfactory results.

The main battery of the *Indiana* has been installed and the secondary battery is being put in place.

Part of the main battery of the *Oregon* has been shipped and the rest will follow as fast as transportation can be obtained. There are but two or three cars in the United States capable of carrying a 13-inch gun across the continent, and consequently several months are needed for the delivery of the *Oregon's* main battery.

The *Terror's* battery has been installed and, as far as this Bureau is concerned, is ready for test.

The main battery of the *Monadnock* is being installed.

SMALL ARMS.

At the date of last report the caliber and general characteristics of a small arm for the Navy had been determined, and an advertisement had been issued calling upon inventors and others to submit rifles to a competitive test for selection of a breech and magazine action. As a result of this competition a small arm, known as the Lee straight-pull rifle, the invention of Mr. J. P. Lee, of Hartford, Conn., was recommended by the Small Arms Board. This selection having been approved by the Department, the right to manufacture his rifle was purchased from Mr. Lee. Bids for the manufacture of 10,000 of these rifles were at once called for, and the Winchester Repeating Arms Company, of New Haven, Conn., being the lowest bidder, a contract is now being drawn up with that company, and it is hoped that within ten months the Bureau will be able to begin to equip the Navy with a really modern small arm.

The Lee straight-pull rifle is on what is known as the repeating system, the firing being from a magazine loaded by means of clips or chargers. Its distinguishing feature is the bolt, whose motion in working the piece is simply forward and back, instead of requiring an additional movement of rotation for locking and unlocking, as is usually the case. This omission of one movement adds greatly to the rapidity of fire and enables the gun to be fired five rounds, the contents of one clip, very rapidly and with good aim without removal from the shoulder. For example, it was found that a seaman entirely unfamiliar with the arm, after a few trials, made the following time with rough

aim, from the shoulder: Firing two minutes from the magazine, beginning with magazine charged and chamber empty, 63 shots; same repeated, 71 shots; time of 20 shots, beginning with chamber loaded but firing pin locked, 28 seconds; same repeated, 28 seconds; time for five shots, 3 seconds.

The clips or chargers for the Lee gun are another novel feature, being very simple and efficient and much lighter than those generally used, weighing only 85 grains each. The method of using the clip is to insert it with its five cartridges into the magazine of the gun, which is of central under-receiver type, from which it drops as the bolt is pushed forward loading the first cartridge into the chamber. It thus combines the advantages of the two systems most widely used, not requiring to be stripped into the magazine like the Mauser clip, and not being an essential part of the magazine like the Mannlicher clip.

The ammunition, of course, is packed in clips at the factory, and the gun will usually be loaded with clips and fired from the magazine. It can, however, be fired with great rapidity as a single loader, or the magazine can be charged with single cartridges should any exigency of service cause the men to be supplied with ammunition in bulk.

The reports of the Small Arms Board will be found at page 107.

In making what may appear a radical departure in its selection of a caliber smaller than as yet adopted elsewhere and a system differing essentially from any other in actual use the Bureau is convinced that it is looking to the future. Each step which has been taken in the development of the modern small arm has been an increase in rapidity of fire or a decrease in caliber, and it is surely wise to attempt to advance with one stride as far as existing conditions allow toward the goal to which the world is moving with slow steps. It may be that the wished-for limit has not been attained, but it is safe to say that the advantages of a further decrease of caliber will be insignificant in comparison with those already gained, and that a further material increase of rapidity of fire will only be brought about by the adoption of the automatic rifle.

The automatic system will surely be applied to shoulder guns in the future and caliber will probably be further reduced, but the Bureau has adopted the nearest approach to an automatic gun which is as yet fully developed and the smallest caliber whose successful manufacture is fully assured. But so many misconceptions appear to exist on the subject of reduction of caliber that it will be well to briefly set forth the reasons which justify it.

The advantages of the small caliber are: Greatly increased velocity, flatness of trajectory and penetration; greatly diminished weight of ammunition; and less shock of recoil, as illustrated by the following table:

Arm.	Caliber.	Muzzle velocity.	Danger space for 5 feet 9 inches.	Penetration in pine at 500 yards.	Number of rounds in 8 pounds' weight.	Energy of recoil.
		Foot-seconds.	*Yards.*	*Inches.*		*Foot-pounds.*
Springfield	.45	1,316	405	10	75	27
Austrian Mannlicher	.315	2,073	555	18	123	10
United States Navy	.236	2,460	700	23	170	7

In other words, the change in the Navy caliber from 0.45 to 0.236 will result in a lighter gun, less shock of recoil, almost double muzzle velocity and danger space, more than double penetration, and a more than *double* quantity of ammunition carried on the person.

These are enormous advantages, and, moreover, they are not theoretical only, but are actual results. Let us see what can be alleged to balance them. There are two disadvantages which attend reduction in caliber and the consequent reduction in weight of bullet: the wounds produced by small-caliber bullets will frequently not be sufficient to put the wounded out of action and their shock will not stop the onset of excited men at short range.

In general answer to these objections it may be said that, even granting them to the fullest extent, they are insignificant as compared with the counterbalancing advantages. The battle of the future will be fought at long range, and men will not live to come to close quarters with an enemy who stands his ground. Moreover, out of 100 men wounded in action, however slightly, at least 99 will go to the rear without stopping to investigate the severity of their wounds. If the small caliber gives three times as many hits, as it will, we can well afford to have each hit less effective. But it is not true that the injury produced by the blow of a very small bullet is so slight; frequently it is much more terrible than the effects of the large caliber. The modern bullet, of lead with a thin steel jacket, under certain circumstances produces what is called an "explosive effect."

Two simple experiments will illustrate this: (1) Fire through the side of an open-topped bucket full of water and the iron hoops will be ruptured and the bucket burst open; (2) fire at short range against some resisting material like hard oak, and after small penetration the bullet will bulge, its jacket split open, and the contained lead spurt out and cut its way onward in jagged holes. The first of these experiments illustrates the action of the small-caliber bullet when it enters any organ of the human body which contains a considerable quantity of fluid. The energy due to the enormous velocity of the bullet is imparted to the elastic particles of the fluid and they are driven from its path against the retaining walls of the organ and burst them. The second experiment shows what happens when the bullet meets bone whose resistance to perforation is sufficient to upset it. In both cases the wound of the small caliber is much more terrific than ever produced by the slow-moving bullet of large caliber. Moreover, these "explosive effects," being due to very great striking velocity, increase in number as range decreases.

Those who decry reduction in caliber look only upon its attendant disadvantages and greatly exaggerate them, while they entirely fail to take into account overwhelming advantages which not only justify the reduction but compel it.

MACHINE GUNS.

The Bureau regrets that delay in the completion of the various machine guns of 6-millimeter caliber, which are to be tested in competition, has made it necessary to postpone the tests from time to time, with the result that even yet no decision has been reached as to the system to be adopted for the naval service.

The Gatling and the Colt automatic guns have been tested and the Accles gun is ready for test, but the Maxim-Nordenfelt and an automatic gun to be submitted by the Hotchkiss Ordnance Company have not yet arrived.

It is confidently hoped, however, that all these guns will be ready for test very soon and that a selection will have been made within a month from this date.

It is proposed immediately upon the adoption of a system to contract for a considerable number of machine guns, which are urgently needed in the service.

SUBMARINE BOATS.

Under date of March 13, 1895, the Department entered into a contract with the John P. Holland Torpedo Boat Company, of New York, for the construction of a submarine torpedo boat in accordance with plans and specifications submitted by the above-named company and approved by the Department.

The contract price for the boat is $150,000, and she is to be completed and ready for delivery within twelve months from the date of contract, under penalties for delay.

The remaining $50,000 of the sum appropriated by Congress is to be used by the Bureau in conducting experiments with the submarine boat after her delivery to the Government.

AUTOMOBILE TORPEDOES.

Whitehead.—Thirty torpedoes of Mark II type have been delivered during the year by the E. W. Bliss Company. This delivery completed the contract made with that company on May 12, 1894, for 50 of the Mark II type and, together with the 100 of Mark I type already supplied under a former contract, put the Department in possession of 150 of these torpedoes. The practice had with them so far in service continues to demonstrate the excellence of their manufacture. One torpedo lost in practice at the torpedo station on July 11, 1894, was recovered one year and five days afterwards, covered with rust and marine growth, but not much corroded; no repairs were found necessary to put it in good working condition. Another torpedo was lost on July 15, 1895, while experimenting with a new depth-controlling device. Many attempts have been made to recover it, but without success so far.

Howell.—The Hotchkiss Ordnance Company has completed its delivery of the thirty 14.2-inch torpedoes contracted for January 4, 1889, and in addition has delivered twenty more of the same type under an order from the Department based upon the terms of the original contract. Two torpedoes were lost while testing torpedo tube installations on board the *Cincinnati* and *Detroit* and one was lost in practice from the *Stiletto*. One of these has since been recovered. It had been down from October 26, 1894, till the middle of July, 1895, and its condition upon recovery demonstrated the advisability of having all the parts possible made of noncorrodible metals, as the bronze and brass parts of the torpedo were in excellent condition, while the steel work was so badly corroded as to require extensive repairs. The small reserve buoyancy possessed by these torpedoes is against their easy recovery in practice. Efforts that promise success are being made at the Naval Torpedo Station to provide a device for overcoming this difficulty.

Howell torpedoes other than those of service type.—Four torpedoes of 14.2 inches diameter, differing from the service type more or less in design, have been tested by the Hotchkiss Ordnance Company during the year. The results, have so far as is known, not been such as to justify a radical departure from the present service type. A larger Howell torpedo, of nearly the same dimensions as the service Whitehead, has been tested by the company a number of times during the past summer. The greatest speed attained for 600 yards is stated to be 28.8 knots. When greater accuracy has been attained with it in the

vertical plane it is the company's intention to submit it for official tests. The comparatively good speed and range promised, together with its moderate size and large charge-carrying capacity, may serve to recommend it for service adoption.

RESERVE SUPPLY OF AUTOMOBILE TORPEDOES.

The Bureau desires again to call attention to the very small reserve supply of torpedoes of each type that now exists. The ships now in commission or completing will carry 85 torpedo tubes and 164 torpedoes, leaving a reserve of 32 torpedoes in all—23 Whitehead, for 67 tubes, and 9 Howell, for 18 tubes, a number barely sufficient to make up for practice casualties if torpedo practice be pursued with anything like the requisite vigor. An additional supply of 100 will be a sufficient reserve for the types now in service.

TORPEDO LAUNCHING APPARATUS.

Six torpedo tubes for bow or stern installation, 2 small air compressors and 10 separators have been delivered by the E. W. Bliss Company during the year. Four tubes, 2 for bow and 2 for deck installation, have been made at the Washington Navy-Yard and 11 large air compressors for use on cruisers and battle ships have been furnished by the Rand Drill Company, of New York. Nearly the whole of this material has been installed. Owing to the general unsatisfactory design and working of the Whitehead air compressors, first bought for ship's use, the Bureau has sought for and obtained compressors of domestic design that give excellent results in service.

Four Howell torpedo tubes of the lower-deck broadside type yet remain to be delivered by the Hotchkiss Ordnance Company. These tubes are for the *Brooklyn* and will soon be completed. One central pivot tube has been purchased and sent to the torpedo station for experimental use.

An interesting series of experiments was made at the beginning of the year at the torpedo station to determine at what distance a torpedo boat could be discovered approaching from hearing the noise made by the launching tube motor when spinning up the fly wheel of the torpedo preparatory to launching. The report on these exeriments will be found on page 54.

INSTALLATION OF LAUNCHING APPARATUS, TORPEDOES, AND ACCESSORIES.

The automobile torpedo outfits of the *Olympia*, *San Francisco*, *Minneapolis*, *Columbia*, *Raleigh*, *Cincinnati*, *Detroit*, and *Montgomery* have been completely installed during the past year. At the torpedo station the well systematized method of preparing the torpedo outfits for the various ships has always made it possible for vessels sent there to receive and install in place their torpedoes and accessories, and to have their tubes tested by firing the torpedoes from them, all in a very short time. The entire outfit of torpedoes and accessories of the *Olympia* was shipped by rail from the torpedo station to the ship at the Mare Island Navy-Yard, where it arrived in excellent condition. The Mare Island Navy-Yard will necessarily have to become a base for the supply and shop repair of torpedoes carried by ships of the Pacific and Asiatic squadrons, and as soon as a proper reserve supply of torpedoes is assured preparations to that end should be made.

The torpedo launching apparatus of the *Maine*, *Texas*, 1 *Massachusetts*, *Oregon*, and *Lancaster* have been installed, ai need to take their torpedoes on board to make their outfits com

CUNNINGHAM ROCKET TORPEDO.

The two torpedoes of this type mentioned in last year's re having been ordered, were received and tested at the torpedo with results that have so far not been satisfactory. The report trials will be found on page 116.

TORPEDO BOATS.

The *Cushing* and *Stiletto* have been, as during the previous y only torpedo boats available for use in making torpedo expe and for the instruction of officers and men in practical torped the *Ericsson* having repeatedly failed in her machinery when a be brought to official speed tests for acceptance. The first tw have served the purpose of giving a number of officers and mei erate knowledge of practical torpedo work absolutely essential t them to handle and fire torpedoes from ships' torpedo tubes, a experiments conducted by Lieut. F. F. Fletcher during the yea in command of the *Cushing*, have served as the basis of a most v report on torpedo discharge. For instruction purposes alone larger number of torpedo boats is very essential. Howeve instruction may be gained on board cruising ships in the detail pedo mechanism, opportunities for practical exercises with to will not occur unless they are made at considerable trouble and e It requires long and constant practice to gain a knowledge eccentricities and capabilities of automobile torpedoes, and such edge can best be obtained on torpedo boats, of which we need 20 of the first class for this purpose alone. The Bureau de bring to your favorable consideration the necessity for recomn 12 more first-class torpedo boats as the immediate increase to b for in this class of vessels. These, with the *Cushing*, the *Eri* she be finally accepted), and the torpedo boats Nos. 3, 4, 5, 6, 7 building or authorized, will give a total of 20 first-class boats.

The failure of the *Texas's* third-class torpedo boats to develc than a very moderate speed precludes the idea of their useful that vessel in time of war. Ill adapted as they are for ships' u possible they may be made use of elsewhere for purposes of instruction.

AMMUNITION HOISTS.

Steam hoists for 6-inch ammunition have been fitted on bc *Maine*. Hand-power hoists for 6-inch ammunition are being i on board the *Texas*. Hoists for both 6-inch and 6-pounder amm are being fitted on board the *Oregon*, to be worked by hydraulic

In the *Indiana* and *Massachusetts* the 6-inch ammunition hoisted by a simple whip, while the 6-pounder supply will mechanical hoist driven by an electric motor.

RANGE FINDERS.

Fiske range finders have been installed on board the *New Yo cinnati*, *Minneapolis*, *Columbia*, *Maine*, and *Texas*. Reports fro ers using this instrument show its usefulness and reliabilit proper care is taken of it and men properly drilled in its use.

The stadimeter has also been tried in actual service and found to be a valuable instrument.

Tests of the Fiske range indicators have shown their importance, especially in vessels where isolated gun positions make audible transmission of signals impossible.

BLASTS FROM HEAVY GUNS.

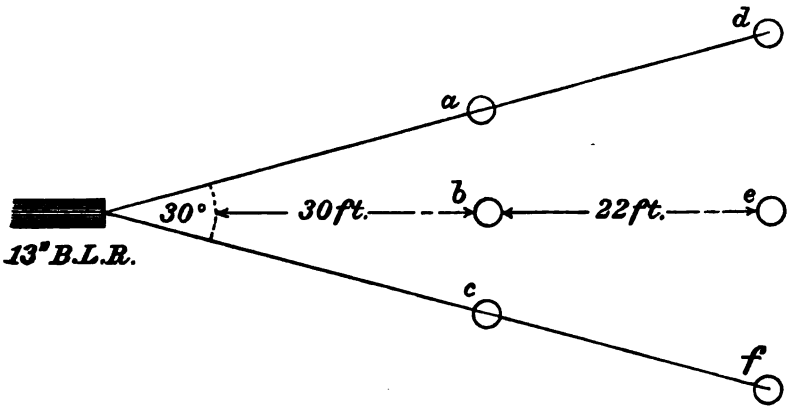
With a view to ascertaining the extent and severity of the blast from heavy guns, experiments have been conducted at the proving ground, the results of which have demonstrated the vital importance of considering this an element in the disposition of the battery on board ship.

The first experiment consisted in securing a plate 1 inch thick and 74 by 68 inches in area, horizontally, 4 feet below the axis of the bore of an 8-inch gun. The plate was held up at its corners by four 3-inch armor bolts, and the muzzle of the gun projected 17.5 inches over the plate. The plate was so secured that it would be impossible to bend it without bending the armor bolts. Two shots were fired at service velocity, the blast from the first one dishing the plate to a depth of about 4 inches. The second round increased this bending to 7 inches.

A condemned sailing launch was next used in determining the effect of the blasts on boats. This boat was placed with its keel up, parallel to the axis of the blast, 15 feet to the right and 2 feet below it and 9 feet from the muzzle of the gun. An 8-inch gun was used, firing a service charge. Six of the seams were opened out on both sides, the calking was set on fire in several places, all the planking of the stem was loosened, and the garboard strake on both sides ripped off. The boat was lifted bodily 3 feet toward the line of fire.

The boat was then placed at right angles to the axis of the blast, the stern being 10 feet to the right and 2 feet below it and 10 feet from the muzzle of the gun. A service charge was fired and all the planking at the stern ripped off and the boat lifted bodily and landed 4 feet farther from the muzzle of the gun.

In proving the 13-inch gun pressure gauges were secured to the ground 9 feet below the axis of the gun and at points shown in the diagram:



The pressures developed in the six gauges were as follows:

a, 2.7 tons per square inch.
b, 2.35 tons per square inch.
c, 1.7 tons per square inch.
d, 1.5 tons per square inch.
e, 1.7 tons per square inch.
f, 1 ton per square inch.

In view of the impracticability of providing sufficient strength to th boats and superstructure to resist these enormous pressures and th great danger to life that would be caused by them, such an arrange ment of the battery should be provided as will eliminate these result or reduce them to a minimum.

MAGAZINES.

The repairs and improvements at the naval magazine, Mare Island Cal., for which an appropriation was made by the act of July 26, 1894 have been completed.. Congress having made an appropriation for th removal of the naval magazine at Craney Island, near Norfolk, Va. the Bureau has selected a tract of land of about 60 acres for the pur pose on the Southern Branch of the Elizabeth River, and the Attorney General is now examining into the title of the land. If found clea steps will be taken to consummate the purchase and to erect thereon th necessary buildings as soon as the consent of the legislature of th State of Virginia to such purchase has been given, as required b Federal statute.

Owing to the limited space at the naval magazine, Fort Mifflin, on th Delaware River, near Philadelphia, Pa., the preparation and storage ammunition for the larger caliber of guns have been seriously impede On the present site, which is less than 300 feet square, are crowded tw magazine buildings, the quarters of the officer in charge, and severa wooden structures for use as a shell house, filling house, stable, etc., ren dering the place entirely too cramped for safety, as a fire at any one o the buildings would be liable to extend to all of the others. It is ver desirable to remove from the present inclosure all the wooden building and replace them by brick or stone buildings farther removed from the magazines. With this end in view the Department has secured from the War Department an additional piece of the Government reservation, extending northward 1,000 feet from the present site of the magazine, and an item of $50,000 is included in the annual estimates of this Bureau for the necessary additional buildings.

In preparing the ammunition at this place for the two battle ships *Indiana* and *Massachusetts* and other naval vessels building at Cramp's shipyards the Bureau has found it necessary to obtain permission of the War Department to temporarily store portions of the ammunition in vacant rooms at Fort Mifflin; besides this, it has been necessary to use certain buildings at the League Island Navy-Yard for the storage of empty projectiles until space can be made for them at the magazine by issues to vessels going into commission. This necessitates several handlings of the ammunition, which for safety and economy should be avoided. This magazine possesses excellent railroad and water facilities for receiving and shipping ammunition, and for this reason alone its capacity for the preparation and storage of ammunition should be enlarged.

The buildings at the naval magazine near Dover, N. J., are entirely unprotected from fire. The Bureau has had under consideration several plans for a water supply at that place, and has concluded that the most efficient and economical method of accomplishing this is by means of a reservoir. The magazine buildings and grounds are so situated that this system can be very conveniently applied. An estimate of $15,000 for the purpose is submitted, and it is requested that the money may be made immediately available.

BATTERIES FOR AUXILIARY CRUISERS.

The necessity of expanding our naval force in case of war by calling into service such merchant steamers as could do efficient work as transports and cruisers has been recognized by the acts of Congress of March 3, 1891, and May 10, 1892. No provision, however, has yet been made for supplying such vessels with the batteries, which alone can give them the power to fight.

The Bureau earnestly renews its recommendation of last year that a yearly appropriation be made for the manufacture of guns and mounts for these vessels, and an estimate of $500,000 for commencing this work is submitted.

INSTRUCTION OF ENLISTED MEN.

The instruction of enlisted men at the Naval Gun Factory, Washington, D. C., and at the Naval Torpedo Station, Newport, R. I., has continued during the year. At the former place 58 men have been under instruction during the year, of whom 45 were transferred to the torpedo station for further instruction. At the latter place 26 men have completed the course and have been found qualified for seamen gunners during the year, and 19 men are still under instruction.

The Bureau regrets that the exigencies of the service have compelled the Bureau of Navigation to still further reduce the periods of instruction from twenty-two weeks to seventeen weeks, in which time it is impossible for the majority of the men to acquire a thorough knowledge of the subjects taught.

Details as to the course of instruction at the torpedo station will be found in the report of the inspector of ordnance in charge, on page 52 of this report.

NAVAL TORPEDO STATION.

The Naval Torpedo Station at Newport, R. I., has remained under the charge of Commander George A. Converse, U. S. N.

During the year the buildings at the torpedo station have been thoroughly repaired and are now in good condition. The new gun-cotton and smokeless-powder factories, which were in process of construction at the date of last report, have practically been completed. The three buildings constituting the gun-cotton factory and two of the three constituting the smokeless-powder factory are already in operation. Every effort has been made to render this plant as complete, efficient, and safe as possible.

The torpedo station, in addition to the great amount of experimental work carried on there, now manufactures not only gun cotton and smokeless powder for the service, but many other articles, such as torpedo directors, depth and rolling registers, gun-firing batteries, and electric primers. Vessels are also sent there to receive their torpedo outfits, which are installed under the supervision of officers attached to the station.

Besides the seamen who are given instruction in electricity, torpedoes, and diving, at the torpedo station, classes of officers are also sent there for instruction and practical exercises with torpedoes. Thirty-five officers of the Navy and two of the Revenue Marine have been under instruction during the year.

Attention is called to the very interesting report of the inspector of ordnance in charge of this station on page 35.

NAVAL GUN FACTORY.

The Naval Gun Factory has remained under the direction of Co mander Theodore F. Jewell, U. S. N.

The approaching completion of the guns for the ships thus f authorized has rendered it necessary to gradually reduce the number workmen employed in the gun shops until any further diminution w compel the discharge of men whose experience in this line of wo renders them invaluable. It will also soon be necessary, under existi conditions, to largely reduce the force in the gun-carriage shop. F this, as well as for reasons heretofore stated, the Bureau urges th appropriations be made at the coming session of Congress for reser guns and for guns to arm the auxiliary cruisers.

The Bureau approves the recommendation of the superintendent the Naval Gun Factory that the old foundry be remodeled, and h inserted in its estimates an item for the cranes, cupolas, blowers, a other appliances necessary for a modern foundry.

The report of the superintendent of the Naval Gun Factory will l found on page 151.

NAVAL PROVING GROUND.

The Naval Proving Ground has remained under the command Lieut. N. E. Mason, U. S. N.

Practically all the experimental work with ordnance material is c ried on at this station. Besides experimental work, the ballistic te of armor, acceptance tests of projectiles and powder, and proofs guns and mounts are made there.

The condition of the Naval Proving Ground has been constan improved from year to year by the building of retaining walls, putti up of fences, repairs to buildings and wharves, etc. A better und standing of the scope of the work carried on at this place may gained by reference to Lieutenant Mason's report, which will be fou on page 195

Very respectfully,

W. T. SAMPSON,
Chief of Bureau of Ordnance.

The SECRETARY OF THE NAVY.

A.—*Statement showing the amount appropriated under each specific head of appropriati for the service of the Bureau of Ordnance during the fiscal year ending June 30, 189 expenditures during the same period, and balance remaining on hand June 30, 1895.*

Appropriation.	Appropriated.	Expended.	Balance Ju 30, 1895.
Ordnance	$200,000.00	$178,360.16	$21,639.
Repairs	30,000.00	28,448.64	1,551.
Civil establishment	26,824.00	25,528.78	1,295.
Contingent	8,000.00	7,466.58	533.
Torpedo station	60,000.00	56,725.42	3,274.
	324,824.00	296,529.58	28,294.

The amounts expended were—

For labor	$195,023.
For material, etc	101,505.
Total	296,529.

The balances remaining are all needed to meet outstanding obligations, except th under "Civil establishment."

The above statement does not embrace continuous appropriations for the n *ships or for special objects.*

-Statement of the number of days' labor and cost thereof from July 1, 1894, to June 30, 895, at the respective navy-yards and stations, chargeable to the Bureau of Ordnance.

Navy-yard.	Number of days.	Cost.
tsmouth	536	$1,126.44
ton	1,339	3,336.12
w York	35,124	97,274.25
gue Island	4,274	10,245.60
shington	278,656	694,262.37
rfolk	15,537	33,200.98
nsacola	365	480.00
are Island	13,412	37,877.93
ey West	31	75.00
ew London	7	10.00
nnapolis, Md	365	720.00
aval Proving Ground	27,253	40,571.66
orpedo station	32,071	78,951.46
Total	408,970	998,131.81

Includes labor and outfits for new ships and under appropriations for special objects

C.—*Amount expended during the fiscal year ending June 30, 1895, from the appropriations under the Bureau of Ordnance for civilian semployed on clerical duty or in any other capacity than as ordinary mechanics and workingmen.*

Navy-yard.	Rating.	Amount paid.
New York	1 clerk	$1,400.00
	1 assistant expert in steel, Bethlehem Iron Works	1,560.00
	1 writer, Pittsburg, Pa	936.00
	1 copyist	159.74
Washington	1 clerk	1,600.00
	1 clerk	1,200.00
	1 writer	1,017.25
	1 writer	1,017.25
	1 telegraph operator and copyist	900.00
	1 copyist	720.00
	1 copyist	720.00
	1 draftsman	1,726.03
	1 draftsman	1,081.00
	1 draftsman	1,081.00
	1 draftsman	1,081.00
	1 assistant draftsman	209.39
	1 assistant draftsman	562.61
	1 foreman	1,500.00
	1 foreman	587.68
	1 foreman	735.61
	1 draftsman	1,422.72
	1 draftsman	1,324.44
	1 draftsman	1,111.95
	1 draftsman	1,104.62
	1 draftsman	1,112.30
	1 draftsman	964.29
	1 draftsman	1,021.38
	1 draftsman	1,102.11
	1 draftsman	1,113.20
	1 draftsman	1,094.53
	1 draftsman	927.52
	1 draftsman	1,073.18
	1 draftsman	967.20
	1 draftsman	919.62
	1 draftsman	948.48
	1 draftsman	954.33
	1 draftsman	814.70
	1 assistant draftsman	160.75
	1 writer	1,232.00
	1 writer	1,060.50
	1 writer	274.88
	1 writer	286.88
	1 writer	1,117.93
	1 copyist	1,017.12
	1 copyist	1,017.12
	1 copyist	1,017.12
	1 copyist	259.17

C.—*Amount expended during the fiscal year ending June 30, 1895, etc.*—Continue

Navy-yard.	Rating.	Am pa
Washington	1 copyist	$7
	1 stenographer and typewriter	7
	1 copyist	2
	1 chemist	1,9
Norfolk	1 clerk	1,1
	1 draftsman	2
Mare Island	1 writer	1,0
	1 draftsman	1,9
	1 draftsman	3
Naval Proving Ground	1 writer	1,0
Torpedo station	1 clerk	1,2
	1 chemist	2,5
	1 draftsman	1,5
	1 draftsman	1,3
	1 draftsman	6
	Total	61,8

D.—*Abstract of offers for furnishing supplies or services, and which were contracte by the Bureau of Ordnance, during the fiscal year ending June 30, 1895, and cont awarded thereon.*

FORT NORFOLK, VA.

[Advertisement dated July 18, 1894.]

Addition to dwelling:

George T. Taylor and George T. Tumber	$1,52
J. Herbert Williams	1,95
John E. West	1,59
James H. Brinson	1,46
George S. Ferguson	1,65
Freeman & Dennis	1,24
Edward Hart (accepted)	1,17

Contract dated August 31, 1894.

NAVAL MAGAZINE, FORT MIFFLIN.

[Advertisement dated August 28, 1894.]

General repairs:

I. H. Hathaway & Co. (accepted)	$4,

Contract dated September 29, 1894.

NAVAL MAGAZINE, MARE ISLAND, CAL.

[Advertisement dated October 23, 1894.]

Erection of buildings:

C. C. Blair	$14,
John A. Whelan & Bro	15,
J. B. McKenzie	11,
William A. Butler	11,
James P. Burke	12,
J. J. Luchsinger, M. S. Wilds, and J. G. Sharp	13,
Alexander L. Campbell	10,
T. B. Bassett	12,
John Massey	13,
Robert Boyd	10,
Bateman Bros. (Accepted)	10,
Riley & Loane	14,

Contract dated December 27, 1894.

E.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Ordnance, Navy Department.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES.			
Chief clerk (R. S., p. 70, sec. 416; Mar. 2, 1895)	$1,800.00		
Draftsman (same acts)	1,800.00		
One assistant draftsman (July 11, 1888; vol. 25, p. 283, sec. 1; Mar. 2, 1895)	1,400.00		
One clerk of class 3 (R. S. 27, 167; Mar. 2, 1895)	1,600.00		
One clerk of class 2 (same acts)	1,400.00		
One clerk of class 1 (same acts)	1,200.00		
One clerk (same acts)	1,000.00		
One copyist (same acts)	900.00		
One assistant messenger (same acts)	720.00		
One laborer (same acts)	660.00		
		$12,480.00	$12,480.00
ORDNANCE AND ORDNANCE STORES.			
Procuring, producing, preserving, and handling ordnance material; for the armament of ships; for fuel, material, and labor to be used in the general work of the Ordnance Department; for furniture at magazines, at the ordnance dock, New York, and at the Naval Ordnance Proving Grounds (appropriated; Mar. 2, 1895)	180,000.00		
Expenses of target practice (appropriated; Mar. 2, 1895)	15,000.00		
Maintenance of Proving Ground (appropriated; Mar. 2, 1895)	5,000.00		
Modern battery for the Hartford (submitted)	150,000.00		
Reserve supply of guns for ships of the Navy (appropriated; Mar. 2, 1895)	250,000.00		
Reserve supply of projectiles for ships of the Navy (submitted)	200,000.00		
Additional supply of torpedoes (submitted)	142,000.00		
For guns and mounts for proposed battery for instruction of cadets, to be installed in the gun house, recommended by the board of officers on the reconstruction of buildings at the Naval Academy (submitted)	57,166.00		
		999,166.00	300,000.00
REPAIRS, ORDNANCE.			
Necessary repairs to ordnance buildings, magazines, gun parks, boats, lighters, wharves, machinery, and other objects of the like character (Mar. 2, 1895)	.....	30,000.00	30,000.00
CONTINGENT, ORDNANCE.			
Miscellaneous items, viz: Freight to foreign and home stations; advertising; cartage and express charges; repairs to fire engines; gas and water pipes; gas and water tax at magazines; tolls, ferriage, foreign postage, and telegrams to and from the Bureau; technical books, and incidental expenses attending inspections of ordnance material (Mar. 2, 1895)	.....	8,000.00	8,000.00
TORPEDO STATION.			
Labor, material, freight, and express charges; general care of and repairs to grounds, buildings, and wharves; boats, instruction, instruments, tools, furniture, experiments, and general torpedo outfits (Mar. 2, 1895)	60,000.00		
Extending sea wall, Torpedo Station (submitted)	25,000.00		
		85,000.00	60,000.00
ARMING AND EQUIPPING NAVAL MILITIA.			
For arms, accouterments, signal outfits, pulling boats, the printing of the necessary books of instruction for the naval militia of the various States, and for one clerk at $1,200 per annum, under such regulations as the Secretary of the Navy may prescribe (Mar. 2, 1895)	.....	50,000.00	25,000.00

E.—*Estimates of appropriations required for the service of the fiscal year ending Jun 1897, by the Bureau of Ordnance, Navy Department*—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amo appropi for t current year en June 30,
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H.:			
One writer when required (Jan. 30, 1885; Mar. 2, 1895)	$500.00		
Navy-yard, Boston Mass.:			
One writer when required (same acts)	500.00		
Navy-yard, New York:			
One clerk (same acts)	1,400.00		
Navy-yard, Washington, D. C.:			
One chemist (submitted; Jan. 30, 1885; Mar. 2, 1895)	2,500.00		
One clerk (same)	1,600.00		
One clerk (same)	1,200.00		
Two writers, at $1,017.25 each (same)	2,034.50		
One draftsman (an increase of $700, submitted) (same)	2,500.00		
Three draftsmen, at $1,081 each (same)	3,243.00		
One assistant draftsman (same)	772.00		
Two foremen, at $1,500 each (same)	3,000.00		
Two copyists, at $720 each (same)	1,440.00		
One telegraph operator and copyist (same)	900.00		
Navy-yard, Norfolk, Va.:			
One clerk (same)	1,200.00		
Navy-yard, Mare Island, Cal.:			
One writer (same)	1,017.25		
Naval Ordnance Proving Ground.:			
One writer (same)	1,017.25		
Naval Torpedo Station, Newport, R. I.:			
One chemist (same)	2,500.00		
One clerk (same)	1,200.00		
One draftsman (same)	1,500.00		
		$30,024.00	$26,8
NAVAL MAGAZINE, FORT MIFFLIN, PA.			
Construction of new brick or stone buildings in place of the present wooden ones (submitted)	.....	50,000.00	.....
NOTE.—The present buildings are a source of danger, and are entirely inadequate to meet the demands for storage of ammunition at this station. The above change is considered very necessary.			
NAVAL MAGAZINE, DOVER, N. J.			
Introduction of water supply for the new naval magazine at Dover, N. J., to be immediately available (submitted)	.....	15,000.00	.....
NOTE.—This station is now dependent upon wells for its water supply, and the need of better facilities in case of fire or for ordinary requirements is urgent.			
RESERVE GUNS FOR AUXILIARY CRUISERS.			
Toward the armament of modern guns for auxiliary cruisers mentioned in the act approved March 3, 1891, and in section 4 of the act approved May 10, 1892 (submitted)	.....	500,000.00	.....
GUN PLANT, NAVY-YARD, WASHINGTON, D. C.			
For cupolas and blowers, traveling crane and runways, swing cranes, blower engines, and iron elevators, and for installing and connecting the same in the brass and iron foundry submitted)	.....	65,000.00	.....
INCREASE OF THE NAVY, ARMOR AND ARMAMENT.			
Toward the armament and armor of domestic manufacture for the vessels authorized by the act of August 3, 1886; of those authorized by the act of June 30, 1890; of those authorized by the act of July 19, 1892; of the vessels authorized by the act of March 3, 1893; of the three torpedo boats under the act of July 26, 1894, and of the vessels authorized by the act of Mar. 2, 1895 (Mar. 2, 1895)	.....	3,890,204.00	4,837,6

ANNUAL REPORT OF NAVAL TORPEDO STATION, 1895.

UNITED STATES NAVAL STATION,
Torpedo Station, Newport, R. I., September 14, 1895.

SIR: I have the honor to make the following report of the condition of this station, of the work done during the past year, and of that now in progress and contemplation:

The following changes have occurred in the personnel during the past year:

Detached.—Acting Gunner J. Shannon, December 10, 1894; Acting Gunner W. A. Cable, May 25, 1895; Lieut. R. C. Smith, August 1, 1895; Medical Inspector A. F. Price, September 11, 1895, and Lieut. G. F. W. Holman, September 14, 1895.

Reported for duty.—Lieut. J. B. Bernadou, September 26, 1894; Gunner Charles Morgan, October 16, 1894; Acting Gunner W. A. Cable, December 19, 1894, and Lieut. Hamilton Hutchins, July 1, 1895.

The present assignment of duty is as follows:

Commander George A. Converse: Inspector of ordnance, in charge of station.
Lieut. Commander Duncan Kennedy: Charge of electrical laboratory, dynamo room, and experimental electrical work; instructor in electricity; supervision of enlisted men, including detail of seamen under instruction.
Lieut. Hamilton Hutchins: Charge of torpedo-assembling room; inspection of outfits, magazines, and manufactured explosives; instructor in practical torpedo work.
Lieut. John B. Bernadou: Charge of manufacture of high explosives.
Lieut. Edward E. Capehart: Charge of manufacture of fuses, primers, etc.; instructor in diving; immediate charge of *Stiletto*.
Gunner Charles Morgan: Assistant to inspector of outfits, magazines, etc.
H. F. Brown: Chemist at torpedo station.
Karl Hedburg: Draftsman.

BUILDINGS, WHARVES, BOATS, PLANT, ETC.

Buildings.—Extensive repairs have been made to all buildings at this station during the year. All wooden buildings have received repairs to the woodwork and have been repainted. The brick buildings have been repaired wherever necessary and repointed and the woodwork has been repaired and repainted. All buildings are now in excellent condition.

The chimney of the boiler house has been overhauled, the top relaid, the entire outer surface repointed and given one coat of oil and one of paint. Its condition is now as good as when built.

Attention was called in my last report to the desirability of providing a new carpenter shop and paint shop. The crowded condition of the buildings on the north end of the island renders their erection at the present time inexpedient. It is proposed to extend the sea wall on the northeast side of the island between the large boathouse and the main dock, thus reclaiming a large area of ground which will be admirably adapted for the location of buildings of this kind.

Wharves.—All wharves and floats have received a thorough overhauling and are now in fair condition.

The piling about the crane on the *Fortune's* dock should be renewed during the coming year.

Marine railways.—The ways are all in good condition, repairs having been made when necessary. The capstans have been put in good serviceable condition.

Tug Fortune.—On October 10, 1894, the boilers of this vessel were condemned by survey and the steam pressure allowed limited to 15

pounds—sufficient only for heating purposes. The hull was surveyed on November 9, 1894, and extensive repairs recommended. It is understood that this vessel will soon be withdrawn from the station for the purpose of receiving new boilers, new machinery, and for a thorough overhauling of the hull and rearrangement of quarters. In this event it is earnestly recommended that another vessel be sent here temporarily for the accommodation of the seamen under instruction and such other enlisted men as may be left at the station.

Ferry launches.—Both ferry launches were kept constantly under steam during the past winter on account of the necessity of having a boat in the water available for communicating with such vessels as might arrive to receive their torpedo outfits. Both were, however, overhauled during the spring, and are now in serviceable condition.

The *Wave* should receive a new boiler as soon as funds are available, and it is recommended that a water tubular be substituted for the present locomotive type of boiler, as occupying less space and being more suited to the special service for which the boat is employed.

Other launches.—The launch *Ripple* still continues to be of service, although the hull is old and decayed and the engine and boilers are of obsolete type. The boat has been in use at this station for nearly twenty-five years, and during the past few years has been under steam daily through the summer months for use as tender to the diving launch.

The tubes of the boiler of the *Spray* were found to be deteriorating rapidly from galvanic or similar action, and were renewed during the past winter. The machinery of the boat is in good condition, but the hull is weak.

The *Success* has been overhauled and repaired and is in a serviceable condition. While available for boarding and similar work, it is not suitable for other purposes on account of its size and lack of power.

It is recommended that the station be furnished two new launches for general work.

Plant.—The machinery, tools, and general plant have been repaired from time to time as circumstances required, and are in good condition. One small lathe has been added to the machine shop during the past year, but several additional and more modern machines are required to meet the demands of the work now done at this station.

During the year a new 75-horsepower boiler of the Babcock & Wilcox type has been set up. The other two boilers have been thoroughly overhauled, and their condition is good. The beneficial effects of using the water supplied by the Newport waterworks in preference to the well and rain water formerly used are shown in the freedom from deposit of scale and mud and the little attention the boilers require in consequence.

Instruments.—Few additions have been made to the electrical or chemical instruments or apparatus used for investigation, experiment, or instruction. While it would have been desirable to procure instruments, no money has been available for the purpose.

Lighting system.—In the last annual report attention was called to the desirability of having a new generating plant and switch board on account of increased efficiency and economy but more particularly for the purpose of instructing the seamen who are qualifying as seamen gunners and are liable to be placed in charge of electrical plants afloat.

Arrangements have recently been made by which the Bureau of Equipment is to loan to this station a generating set of the most modern type, and similar to those now being installed in our new battle

ships. It is expected that the new machine will be received and in operation by the 1st of October.

A switch board of the type used in service will be procured without delay, so that men taught in its use will be familiar with those which they will be called upon to manipulate on board ship.

The underground cables and conductors are showing signs of deterioration and are of insufficient capacity. They will be renewed as soon as funds for the purpose are available.

Water system.—The completion of the gun-cotton and smokeless-powder factories necessitated an increase in the water supply of the station, and to meet this demand an additional 3-inch water main has been laid across the harbor, thus practically increasing the capacity threefold. The system now being double renders the liability of the supply becoming entirely cut off by accident more remote.

The water has been introduced into the buildings of the gun-cotton and smokeless-powder factories, the machine shop, the electrical laboratory, and the general storehouse.

Fire system.—Extensive improvements have been made in the fire system of this station. The fire main has been extended northward through the central part of the island, and additional hydrants have been put in, so located that at least four streams of water can be used on any of the public buildings in this vicinity.

Means have been provided by which the city water can be turned into the fire mains to supplement the supply furnished by the steam fire engine, or to entirely replace it in case of accident. As a normal pressure of 65 pounds is habitually maintained in the fresh-water system, it is quite sufficient to project streams over the tops of any of the buildings.

Standpipes, with hose attachments, are now being placed in all of the buildings of the gun-cotton and smokeless-powder factories, the machine shop, the electrical laboratory, and the general storehouse. These standpipes will be connected to the fresh-water system, and are to be constantly under the pressure of that system, but means have been provided by which they can be placed in connection with the steam fire engine if necessary.

A new hose reel and 1,000 feet of new hose, with adequate nozzles, have been added to the plant during the year, and advantage has been taken of the opportunity presented to change the connections of hydrants and standpipes so that they now conform to the type used by the fire department of the city of Newport.

The desirability of such a change became apparent at the time of the destruction of the old gun-cotton factory, when it was found that none of the hose or the nozzles kindly tendered by the city could be utilized on account of the obsolete type of connections at the station.

TORPEDO BOATS.

Stiletto.—The boiler of the *Stiletto* gave considerable trouble during the latter part of last summer, caused by the development of leaks in the tubes. An examination having shown that all of the tubing was more or less corroded and weak, it was deemed advisable to renew it, which was done by the enlisted force of the station with some little assistance from the machine shop. Upwards of 2,500 feet of steam piping were used in replacing that condemned, and the work was expeditiously and satisfactorily done. The boiler is practically new, and should last for several years. The machinery is in excellent condition, and the hull has received minor repairs.

The boat, being fully equipped with Howell torpedoes, is used for the purpose of experiment and instruction and performs valuable service.

A short time since, it being desirable to transfer a quantity of high explosives to the U. S. S. *Columbia* at New York, the *Stiletto* was called into requisition for the purpose. The total weight of the shipment was 2,800 pounds; the time of the trip to New York was eleven hours; return trip nine hours, and the consumption of coal on the round trip about 4 tons.

Cushing.—The *Cushing* has been attached to this station the greater part of the year. In the early winter the boat went to Washington for repairs, and subsequently made a trip through the rivers and canals to Jacksonville, Fla., and return, reaching Newport early in the spring.

The broadside torpedo mounts continue to give satisfaction.

While at this station the vessel is constantly employed in experimental and practical torpedo work, and is used for the instruction of the officers sent here to acquire a knowledge of automobile torpedoes.

TORPEDO-ASSEMBLING ROOM.

In this room sixteen Whitehead torpedoes and six Howell torpedoes, together with such accessories as are necessary to accompany them, are constantly kept in readiness to meet any emergency that may arise.

A torpedo director of the broadside type has been conveniently installed near the broadside tube, and is most useful for purposes of illustration and instruction.

AIR-COMPRESSOR ROOM.

This room is equipped with an air pump of the Whitehead pattern, manufactured by the E. W. Bliss Company, and with one of Brotherhood's latest type. It also contains an accumulator and separators, and is fitted with pipes and valves connecting it with the testing station at the end of the dock. Provision is made for the testing of such pumps as may be sent here for the purpose. During the past year pumps constructed by the Rand Rock Drill Company, the South Norwalk Iron Company, and the E. W. Bliss Company have been given official tests.

TORPEDO-TESTING STATION.

A projecting platform has been built at the end of the wharf erected last year at the testing station. This platform is about 4 feet higher than the wharf itself, and on it has been installed a launching tube for the Howell torpedo. It is proposed to use compressed air for spinning up the motor of this tube.

This station is now equipped with a Howell tube, placed 9 feet above the water, a Whitehead tube, about 5 feet above the water, and an under-water launching cage. A convenient trolley system has been provided for handling the torpedoes, and by its use the tubes can, without much difficulty, be interchanged so as to give different heights of elevation above the surface of the water for experimental work, the limits of range being from 5 to 14 feet, according to the state of the tide.

The channel which was dredged last year has maintained its depth with little change, the silt being much less than was anticipated.

AUTOMOBILE TORPEDOES.

Whitehead.—All of the Whitehead torpedoes, Mark II, contracted for May 12, 1894, were delivered before the expiration of the time provided for by the contract, December 31, 1894.

The receipts, issues, and disposition of the torpedoes have been as follows:

Description.	Total number received.	Expended—		In use at station for instruction and experiment.	Remaining on hand.
		Prior to September 24, 1894.	Subsequent to September 24, 1894.		
Mark I	100	16	52	2	30
Mark II	50	.....	1	1	48

Six Mark I torpedoes which have been used on board the *Cushing* and at this station have become more or less damaged or worn, and have been turned into store temporarily, but will be overhauled and repaired as soon as circumstances permit.

One Mark II torpedo was lost on July 15, 1895, and has not yet been recovered.

Howell.—All Howell torpedoes contracted for by the Bureau have been delivered, the last consignment having been received July 15, 1895.

The receipts, issues, and disposition of the torpedoes have been as follows:

Mark I:

Total number received		50
Expended subsequent to September 24, 1894	12	
In use at station for instruction and experiment	2	
		— 14
Remaining on hand		36

One Mark I torpedo having been damaged, has been turned into store for repairs, and 2 have been lost and not yet recovered.

SPAR TORPEDOES.

No spar torpedo outfits have been manufactured during the past year.

ACCESSORIES FOR AUTOMOBILE TORPEDOES.

The various accessories, spare parts, appliances for transporting, handling, etc., of automobile torpedoes of both types have been prepared and issued with the outfits supplied to ships. The number now remaining on hand necessary to complete outfits is very small, but the stock is being replenished as rapidly as possible.

ISSUES TO THE SERVICE.

Automobile torpedoes.—During the year the following vessels have been supplied with automobile torpedoes and their accessories:

Name.	Howell.	Whitehead.
Stiletto	2	.....
Detroit	2	2
Cincinnati	2	6
Montgomery	2	2
San Francisco	.....	8
Raleigh	2	4
Minneapolis	.....	8
Bancroft	2	(a)
Marblehead	2	(a)
Columbia	.....	8
Olympia	.....	12

a Supplied last year.

Parts of outfits, as required on special requisition, have been issued to the *Cushing*, *New York*, *Marblehead*, *Raleigh*, and *Indiana*.

A Whitehead torpedo outfit of eight torpedoes and accessories is now being prepared for the *Texas*.

Spar torpedoes.—Articles of the spar torpedo outfits, for use in blowing up wrecks and for other purposes, have been issued on special requisition to the *New York*, *Cincinnati*, *Philadelphia*, *Vesuvius*, and the Norfolk and Mare Island navy-yards.

CASUALTIES TO TORPEDOES.

Whitehead.—One Whitehead torpedo, Mark II, was lost on July 15, 1895, while experimenting with the new controlling device invented by Mr. Leavitt, of the E. W. Bliss Company. This torpedo has not yet been recovered.

While the divers were engaged in searching for this torpedo they found No. 4, Mark I, which was lost on July 11, 1894. The torpedo had been submerged one year and five days, but its condition when recovered was good. The shell, although considerably rusted, was not corroded to any great extent. No difficulty was experienced in disassembling it, and none of the parts were broken during the operation. The flask was found partially charged with air and the engines could easily be revolved by hand. It was cleaned, recharged, adjusted, and fired, without requiring any repairs other than the renewal of the gaskets. The run made on its first shot was practically a duplicate of that made at the time the torpedo was lost, except that it came to the surface at the end of its run and floated, as is customary. Since then several very successful runs have been made with it.

The excellent condition of this torpedo after its prolonged exposure demonstrates that many of the objections hitherto urged against the use of steel for the air flask and other parts of the shell were not well founded.

Howell.—Three Howell torpedoes, Mark I, have been lost in exercise or by officers of this station while testing tubes installed on board ships sent here to receive their outfits. Of these one was lost from the *Stiletto*, one from the *Detroit*, and one from the *Cincinnati*. Those lost from the *Stiletto* and *Detroit* have not yet been recovered. The one fired from the *Cincinnati* October 26, 1894, was recovered June 10, 1895, by the divers of this station, it having remained on the bottom during the intervening period. The shell and the bronze parts of the mechanism were in good condition, but the steel parts were so badly corroded as to necessitate extensive repairs.

MANUFACTURES.

The demands on the manufacturing plant of the station have been very great, but have so far been successfully met.

Among the articles of which an unusually large number have been required may be enumerated torpedo directors, with guide bars and brackets, depth registers, rolling registers, deck trucks, transporting cases, transporting straps, hoisting-in straps, gun-firing batteries, and vent-sealing primers.

A number of special machines have been designed and built for the smokeless-powder factory, and others are now in process of construction.

INSTALLATION OF TORPEDO OUTFITS.

er vessels have been sent here to receive their torpedo out-
ectors and other apparatus of a similar nature have been
ıder the supervision of officers attached to this station.
to expedite the work as much as possible, articles likely
ired have been fully prepared in advance. The fitting of
bars for directors requires the greatest amount of time, as
; be accurately placed so as to insure parallelism with the
el. The time required for this work on vessels having six
oes not, as a rule, exceed three working days, and in cases
nergency the work has been completed within forty-eight
the arrival of the vessel.
he year the following vessels have been fitted out at this
d, with one exception, torpedoes were fired from them to
hat the tubes were in working order: *Detroit*, *Cincinnati*,
y, *San Francisco*, *Raleigh*, and *Minneapolis*.

PROGRESS OF EXPERIMENTAL WORK.

riments in progress at the date of last annual report have
eted or continued and others have been considered.
rpedo.—The experiments to determine the distance at which
of the motor and fly wheel of this torpedo could be detected
ous conditions of wind and weather have been completed
rt rendered to the Bureau. As a general result, the experi-
red that the noise of the fly wheel and motor alone was no
whatever to the use of the Howell torpedo for torpedo boats,
e of the boat itself at any ordinary speed can be heard as
orpedo.
f the report on these experiments is transmitted herewith:
or naval defense mines.—A battery intended for this mine was
on November 11, 1893, and has been kept submerged con-
to the present date, a period of nearly two years and nine
th the exception of sixty-three days (November 9, 1894, to
, 1895), when it was raised for the purpose of making repairs
ling wire, which had been chafed through by the action of
It was retained out of water during this period for obser-
ıout having been taken apart.
ents of the battery have been measured from time to time
een found to be practically constant. The E. M. F. at date
ion was 5.5 volts, with a current of 3.1 amperes through 70
ble conductor spar leading wire. At the date of last meas-
ugust 12, 1895, the E. M. F. was 5.5 volts, and the current
the resistance above noted was 3 amperes.
ery is now connected with the electrical laboratory by a lead
t of double conductor spar leading wire, or its equivalent,
flashes a wisp of dry gun cotton on the standard fuse bridge
ıs resistance. The performance of this battery is considered
r.
g batteries.—The effect of moisture on gun-firing batteries
ade the subject of test. A battery, made up ready for plac-
ron box attached to the gun carriage, was connected to a
ner, all connections being left bare, and then submerged in
. Continued contacts, to the number of fifty or more, on the

firing key, under water, were then made, the tester each time showing a bright color in the bridge. The battery and all connections were left in the water over night, and on the following morning seemed to work as well as before immersion. As a further test salt water was substituted for the fresh water and the battery and connections left submerged until the ends of some of the copper wires were eaten away by galvanic action. The battery was removed from the water, new connections made, and under these conditions it was found to have sufficient strength to fire the standard service primer through a resistance equivalent to 300 feet of No. 16 double conductor wire.

A single cell of this battery was placed bottom side up in a close jar of fresh water and left in that position until the positive terminal corroded off, when it was removed and a fresh terminal secured. The tests made before and after the immersion of this cell were almost indentical, and it is apparently as good to-day as it ever was.

These experiments prove that the moisture and dampness to which these batteries will be subject on board ship is not likely to affect them injuriously, and so long as they are not short circuited when the connecting wires are attached they should last almost indefinitely.

Experience with the type of cell adopted, gained during constant use for current work and experimental purposes for a period of over two years, has demonstrated that the battery is fairly reliable, and that if any cell deteriorates or runs down from any cause whatever it is not worth while to endeavor to resuscitate it, but that it should be rejected and a new one substituted.

In a few instances the zinc cup has been eaten through, a white powder deposited on the outside, and the cell found to be inoperative. There seems to be no satisfactory explanation of the cause of this action, and in cases where it occurs the only remedy seems to be to reject the cell affected.

Recovery of torpedoes in practice.—Two devices for recovering automobile torpedoes after use for practice are now being experimented with. One consists in expelling the water from the exercise head at the end of the run, thus increasing its buoyancy by the loss of this weight (upward of 100 pounds) and causing the torpedo to float with its head well out of the water. The experiments have demonstrated the feasibility of this plan and satisfactory results have been obtained. The details of the mechanical appliances are being worked out. Another plan, which could be used also in conjunction with the first, consists in automatically releasing a small buoy which is attached to the torpedo by a line of sufficient strength to raise it. There are exceptional cases in which a device of the latter kind would be superior to the one first described.

Initial dive of torpedoes.—The desirability of knowing the angle at which torpedoes enter the water has long been recognized, and Lieutenant Smith has devised an apparatus for automatically recording the various angles which the torpedo assumes after leaving the launching tube. Experiments thus far made give great promise, and the instrument, if used in connection with that devised by Lieutenant Fletcher for recording the performance of a torpedo during its flight, will add to the completeness of the record and furnish data which will be most valuable in perfecting means of insuring accuracy of the torpedo in practice.

Motor for Howell torpedo.—The use of compressed air instead of steam for spinning up the motor of the Howell torpedo has been fairly successful.

The experiments will be continued, and modifications, if necessary, will be made to the motor now used for the purpose. It is thought that there are many cases in which compressed air can replace steam to great advantage, notably on board ships in which the boiler pressure is too low for the efficient working of the motor. In the case of ships possessing an air plant only a comparatively small pipe would be necessary for connecting the accumulator with the motor, and the exhaust could be most conveniently disposed of.

ELECTRICAL LABORATORY.

The work in this laboratory has consisted of general experimental work; the investigation of voltaic batteries intended for service use; the testing of cables and conductors; the testing of vent-sealing primers; the preparation of batteries and electrical apparatus for issue to the service; the measurements of velocities and pressures obtained by various kinds of powder used in small arms, and the instruction of seamen qualifying for seamen gunners.

Sixty-eight gun-firing batteries have been prepared and issued, as follows: *Texas*, 14; *Amphitrite*, 6; *Monterey*, 4; *Olympia*, 3; Washington Navy-Yard, 38; proving ground, 2, and Atlanta Exposition, 1.

CHEMICAL LABORATORY.

The chemical laboratory during the past year has been principally engaged in work connected with the development and manufacture of gun cotton and smokeless powder, and analyzing and testing such kinds of the latter as have been submitted for the purpose.

The work of this department may be summarized briefly as follows:

Torpedo station gun cotton.—Experiments have been made in order to determine (1) whether the ignition temperature of gun cotton may be lowered by prolonged heating at 100° C.; (2) whether there is any relation between the ignition temperature and the stability of gun cotton, the latter being determined by the heat test. The ignition temperature varied irregularly during the course of the heating, first being lowered and then raised. The final ignition temperature, after 192 hours' heating, was 2.6° lower than at the beginning. The results were not considered sufficiently conclusive to warrant any definite conclusion. No relation whatever was found to exist between the ignition temperature and the heat test.

A careful examination was made of dry gun-cotton primers similar to those thrown overboard from the U. S. S. *Cincinnati* on account of the supposed decomposition. On one of the blocks two reddish spots, composed of oxide of iron, were found. The gun cotton, however, was in excellent condition and of more than ordinary stability.

On November 3, 1894, some of these were placed in a cabinet box for dry primers, similar to those issued to service, and the box itself secured in the office under conditions similar to those that would obtain on board ship. At the end of twelve days a light pink color was observed; but this has not increased in the depth of tone to the present date, and the gun cotton is in good condition.

Heat tests have been made of samples of unwashed gun cotton from thirty-one different lots of torpedo station manufacture, in order to determine their fitness for use as the service explosive in torpedoes. Only one lot, No. 144, was found unfit for use The records show that this lot was made from a quantity of specially prepared bleached cotton waste, with a view of determining its suitability for conversion into

gun cotton. The inferior quality of the finished product is believed to be due to the chlorine which was used in the preparation of the cotton before it was received at this station.

Heat tests have also been made of samples of dry gun cotton from lots 74 and 78, which had been kept in glass-stoppered bottles for over three years. The results proved the stability of well-washed gun cotton, even when kept dry, under unfavorable conditions.

The experimental manufacture of gun cotton has been carried on in order to determine the fitness of a quantity of specially prepared cotton procured from England, and mixed acid, made by the Dundee Chemical Works, for use in the manufacture of gun cotton. Excellent results were obtained by nitrating the cotton after thorough drying, without any preliminary boiling with caustic soda.

Materials used in the manufacture of gun cotton.—Chemical examination has been made of five samples of spun cotton, nineteen samples of unspun cotton, and samples of specially prepared cotton.

Analysis has been made of two samples of mixed acid from the Fairfield Chemical Works, one sample from the Dundee Chemical Works, and samples from fourteen drums supplied by the latter firm, with whom an order for 65,000 pounds has been placed.

Gun cotton for purchase.—Chemical examination has been made of a 10-pound lot of gun cotton received from the California Powder Works. This gun cotton was made by the hydro-cellulose process, and a full description of the process of manufacture has been courteously furnished by this firm. Experiments have shown that (1) the gun cotton gave an unsatisfactory heat test when received; (2) the value for the heat test was lowered during storage in the dry state at the ordinary temperature; (3) the heat test may be raised by boiling with a dilute solution of sodium carbonate, and samples thus boiled appear to be reasonably stable, although in this case also there is a decided lowering of the stability test during storage in the dry state.

Torpedo station smokeless powder.—The chemical examination of torpedo station smokeless powder and of the materials which enter into its manufacture has formed the most important part of the work of this department during the past year. The work on the finished smokeless powder may be summarized as follows:

Three complete analyses, 20 specific gravity determinations, 22 stability (heat) tests, 17 determinations of the ignition temperature, 3 determinations of the solvents, 1 determination of the metallic salts, and an examination of the peculiar hygroscopic behavior of a small lot of K_5.

Materials used in the manufacture of smokeless powder.—Chemical examination of gun cotton for use in the manufacture of smokeless powder has been made as follows:

Heat tests of 234 samples, determinations of the per cent nitrogen in 68 samples, the per cent soluble nitrocellulose in 19 samples, the per cent cotton in 17 samples, the per cent ash in 18 samples, the per cent alkalinity in 18 samples, and the ignition temperature of 12 samples.

Heat tests have been made of 29 samples of soluble nitrocellulose for use in the manufacture of smokeless powder.

Chemical examination has been made of 14 samples of acetone, 5 samples of barium nitrate, and 1 sample of potassium nitrate.

The experimental manufacture of gun cotton by the hydrocellulose process has been an important feature of the work of the year.

In the first series of experiments a good quality of cop waste was used, the conversion into hydrocellulose being effected by a strong solu-

on of hydrochloric acid acting in the cold. The nitrated product contained 13.56 per cent nitrogen, and was found to give results of maximum excellence when made into smokeless powder. The stability of the gun cotton was, however, doubtful, as the heat tests were lowered in a very marked degree during storage in the dry state. This investigation is being continued, and various methods for the formation of the hydrocellulose have been tried; the properties of the nitrated product formed from the same are being determined.

Fulminate of mercury and detonators.—About 2 pounds of fulminate of mercury have been manufactured, and 160 detonator bases have been filled.

Calcium phosphide.—Over 500 pounds of calcium phosphide have been manufactured; 1,269 cans, each containing 10 ounces of phosphide, have been prepared ready for use as torpedo position signals.

Explosives found in commerce and those received from abroad.—Analyses have been made of several foreign and commercial smokeless powders, and their general composition is indicated in the following table:

(1) Troisdorf; insoluble and soluble nitrocellulose.
(2) Kolfit; insoluble and soluble nitrocellulose.
(3) Weidig; soluble nitrocellulose, rosaniline.
(4) Diggs Ordnance Company No. 6; soluble nitrocellulose, rosaniline.
(5) California; nitroglycerin, ammonium picrate, insoluble and soluble nitrocellulose.
(6) Volney; nitroglycerin, insoluble nitrocellulose, picric acid.

Chemical examination has been made of a sample of ammonite, which is an explosive consisting of ammonium nitrate and mono and dinitronaphthalene, and intended chiefly for blasting purposes.

Chemical examination has been made of a sample of rifleite from the 2,000 rounds which were received from the Winchester Repeating Arms Company for the tests of the Lee rifle, and which gave abnormally high pressures in firing. Analyses of three other samples of rifleite are in progress, and it is hoped that in the data thus obtained an explanation of the difference in pressures may be found.

Miscellaneous material submitted for examination.—A large amount of miscellaneous chemical work has been done, including, among others, the following subjects: Venetian red (5 samples), raw linseed oil, lubricating oil (2 samples), mineral oil (kerosene), lard oil (3 samples), cylinder oil, sperm oil (2 samples), ethyl alcohol, methyl alcohol, freezing points of solutions of copper sulphate, sodium hydroxide, and potassium hydroxide; fire extinguishers, platinum-iridium wire, maximum and minimum mercury alarm thermometers, mercury thermostats, boiler scale, comparative rusting effects of various solutions on machine steel and casehardened machine steel, and United States Navy, Durst, Auger, and Mannlicher cartridges.

Water analysis.—Eleven complete analyses have been made of samples of water from the following sources: South well, 4 samples; Newport service system, 4 samples; Naval Training Station, 3 samples.

Investigation of chemical methods.—Important analytical investigations have been carried on during the past year. The details for methods for the valuation of acetone, and in particular for its quantitative determinations have been successfully elaborated. The high grade of acetone required by the specifications is now supplied by the trade at a moderate price.

The correct method for determining the per cent solvents in torpedo station smokeless powder has been determined after a series of experiments.

A more accurate and convenient method for determining the ignition temperature of explosives has been found in the use of a platinum capsule, heated by an air bath, and very satisfactory results have been obtained.

The method for determining the alkalinity of nitrocelluloses has been carefully examined, and modified so as to give accurate results.

Experiments have been made to determine the availability of acetone in place of the expensive ethyl acetate for use in the analysis of gun cotton. Very favorable results have been obtained and a large saving of expense is anticipated.

Experiments which have been made in order to find a method for determining the lower nitrocelluloses in gun cotton, which are insoluble in acetic ether, are still in progress.

Photographing.—Fifty-three negatives and twenty-four lantern slides have been prepared in the photographic room of this laboratory.

GUN-COTTON AND SMOKELESS-POWDER FACTORIES.

These factories, which were in progress of construction at the date of last report, have been practically completed.

The sea wall, of which about 800 feet had been finished last year, has been continued around the north end of the island to the breakwater. This wall is now 960 feet in length, from 7 to 9 feet in height, and averages 7 feet thick at the base and 5 feet at the top. The filling of the space in rear of wall and grading of the banks have been finished.

The three buildings constituting the gun-cotton factory are finished and two of them have been put in operation; the third has nearly all of its machinery installed, and will be ready for use by the first of the coming month.

Of the three buildings comprising the smokeless-powder factory two have been completed and are in use, while the third is well advanced and will be ready for its machinery during the coming week.

It is expected that the entire plant will be in running order within thirty days.

Photographic views of the sea wall and buildings are transmitted herewith.

Every effort has been made to render this plant as complete as possible in all respects. Much care has been bestowed on the interior arrangement of the buildings; the most modern machinery and appliances for the various processes employed have been procured and installed, conveniences for handling and transporting the material have been provided, and every precaution taken to prevent accident.

So far as practicable each of the various machines used is driven by an independent engine directly attached to it, thus rendering it possible to carry on any desired operation with the minimum expenditure of power.

A supply of water sufficient to meet the probable demands of the various processes requiring its use has been provided in each building.

As a precaution against fire, standpipes and automatic sprinklers are provided, and in those buildings where accidents are most liable to occur the number of sprinklers used is at least three times as great as are considered necessary in ordinary practice. Self-registering thermometers and thermostats connected with an alarm in the boiler room have been installed in buildings and rooms in which it is desired to maintain a constant temperature.

Vhile much of the machinery in use is new and many of the oper-ons novel, sufficient tests have been made to demonstrate their fitness the purpose intended, and it is thought that the entire plant will ve most satisfactory.

GUN-COTTON MAGAZINES.

The magazines for the storage of gun cotton are in good condition. Tests of the cotton stowed in these magazines show that it has not teriorated, and that the loss of moisture by evaporation is very small deed. While frequent inspections are made it is believed that no jurious results would ensue were the magazines to remain unopened r a long period of time—in fact, for years.

There is at present on hand, ready for issue—

ervice blocks made at torpedo station	18,247
ervice blocks made by Du Pont	74,425
Total	92,672

laving a weight of 79,327 pounds wet, equivalent to 59,604 pounds dry.

OTHER MAGAZINES.

The magazine on this island, formerly used for the storage of pow-ler, is now used for the temporary storage of small quantities of wet un cotton or of filled war heads awaiting transfer to Rose Island.

A new magazine, 26 by 28 feet, built of brick and similar in general rrangements to the one on this island, has just been completed on Rose Island. It will be used for the storage of smokeless powder.

EXPLOSIVES.

Gun cotton.—Except for experimental purposes and for determining e adaptability of the machinery employed in its manufacture and cently purchased for the factory, no gun cotton has been made during e past year.

Smokeless powder.—During the past year 2,188 pounds of smokeless wder of the different kinds has been manufactured, classified as lows:

	Pounds.
all arm and experimental	30
ounder, R. F. G	700
ounder, R. F. G	994
ch R. F. G	464

Of the above there have been expended for experimental use 664 unds, and 526 pounds have been made up into ammunition for the ounder R. F. G.

There are at present on hand ready for issue 700 pounds for 1-pounder F. G., and 298 pounds for 6-pounder R. F. G.

The first issue of powder to service was made on the 9th of Septem-r, 1895, when 484 rounds of 6-pounder ammunition was supplied to e North Atlantic Squadron at Fishers Island. In accordance with structions this powder was assigned to the following vessels:

	Rounds.
ew York	110
inneapolis	165
aleigh	121
ontgomery	88

Automobile torpedo war heads.—During the year 58 Whitehead and 1[illegible] Howell torpedo war heads have been filled. Of these, 38 Whitehead and 10 Howell have been issued to service, leaving on hand 20 White head and 5 Howell.

Vent-sealing primers.—The manufacture of vent-sealing primers has been continued during the year.

Improvements in the detail of manufacture have been made by which the reliability of the primer has been much increased, and other changes are contemplated which will still further add to its efficiency.

The Bureau having directed that the stocks for these primers shall in future be made at this station, the necessary machinery is being prepared, and special tools adapted for the purpose have been received from the Washington Navy-Yard.

Total number of primers made during year	5,3[illegible]
Issued to service and for test	3,9[illegible]
Leaving on hand ready for issue	1,4[illegible]

In addition to these there are 6,000 in various stages of manufacture about 3,000 being 60 per cent finished.

Primers have been supplied to the following vessels: *Minneapolis*, *Columbia*, *Olympia*, *Monterey*, *Amphitrite*, and *Texas*, and to the proving ground at Indian Head.

FULMINATE DETONATORS AND EXPLODERS.

Service detonators.—No detonators have been manufactured during the past year, the number on hand being sufficient to meet prospective requirements. There are available for service 379.

Exploders for automobile torpedoes.—Exploders for automobile torpedoes have been issued to the various vessels which have received automobile torpedo outfits, and there now remain on hand available for issue 28. The stock will be replenished without delay.

SMOKELESS POWDER.

Smokeless powder for rapid-fire guns and heavier calibers.—The report of progress for last year showed that the M. N. powder had been abandoned and its processes of manufacture discontinued. The evidences of the instability of this explosive previously noticed have received ample verification during the present year in the behavior of experimental samples still retained, numbers of which have decomposed with more or less suddenness, the decomposition being accompanied with the evolution of copious fumes of nitric oxide. No work of any description whatever has been done under the M. N. process during the year.

At date of last report the following smokeless powders were on hand:

Kind.	Amount.	Kind.	Amount.
	Pounds.		*Pounds.*
K-5, 25 m	13	K-B	[illegible]
K-7, 50 m	1	K-C-1	74[illegible]
K-8, 50 m	1	K-C-2	[illegible]
K-10, 50 m	21¾	K-C-3	[illegible]
K-10, hexagonal	2¼	K-D-1	[illegible]
K-10, hexagonal	5	K-D-2	[illegible]
K-A	1	R. F.-1	[illegible]

A number of these varieties of powder had been tested at Indian Head, and the results of their ballistic performance are recorded in the Report of the Bureau of Ordnance, 1894, pp. 96 and 97. Of the lots tried, K-8 was conspicuously the best, giving a muzzle velocity in the 3-pounder 40-caliber gun, within the service pressure limit (15 tons per square inch), of 2,477 foot-seconds.

It will be noted that the list of varieties of K powders quoted shows that there were fourteen kinds of these powers of strip and grain form prepared for experiment. To simplify the work in hand, thirteen of these kinds have been destroyed or set aside, and experimental development principally confined to one kind of powder, advantage being taken of the principle of combustion of maximum powders in similar guns to produce from this one kind of explosive material the size of grain or of strip of powder best adapted for combustion in each particular caliber. By such a system of simplification it was thought that chances of error would be most reduced, the relations of cause to effect be made most clear, and the number of variable conditions affecting the development of a uniform powder be minimized.

It may be here stated that K powders, in their present development, are steps toward the production of a gun-cotton base smokeless or light-smoke powder. The principle of combining nitrocellulose with a nitro derivative of benzole, as exemplified in the M. N. powders, is abandoned. In accordance with the tendencies of development in continental Europe, and following the desires and directions of the Bureau of Ordnance, it was decided to introduce no nitroglycerin into explosives intended for naval uses, so that neither nitro derivatives of benzole nor nitroglycerin, in any proportions whatever, appear as ingredients of torpedo station smokeless powders.

The two principal problems remaining to be solved at the beginning of the present year's work were—

(1) The production from successive lots of gun cotton and substances colloided therewith of successive lots of smokeless powder of uniform ballistic qualities.

(2) The production of smokeless powders that would keep—whose keeping qualities would be at least as good as those possessed by brown or black powders of present-day types.

In seeking to attain the results desired a series of difficulties were encountered which, being met step by step, led to the abandonment of certain processes originally employed in the manufacture of K powders, the modification of other steps, and to the change in nature or proportion of certain ingredients originally forming part of the same. So that these powders, as now manufactured, differ radically in composition and method of preparation from the original experimental K powders.

As illustrating the results attained and the uniformity of the present product, the following list of ballistic performances of several lots of K powders, as now manufactured, is submitted. It is to be remarked that each one of these lots was prepared from totally different lots of similar ingredients, the method of preparation employed in each case alone being identical, so that each small lot of powder thus prepared may be taken as representing a different commercial output, such as would be produced in conducting the manufacture of the powder upon a large scale.

Gun.	Powder.	Charge.	Projectile.	Muzzle velocity.
		Grams.	*Pounds.*	*Ft.-seconds.*
6-pounder	K-C-9	500	6	1,925
Do	do	525	6	2,034
Do	do	550	6	2,102
Do	do	575	6	2,190
Do	do	600	6	2,250
Do	K-C-10	500	6	1,9[illegible]
Do	do	525	6	2,01[illegible]
Do	do	550	6	2,0[illegible]
Do	do	575	6	2,2[illegible]
Do	do	600	6	2,27[illegible]
Do	K-C-11	475	6	1,9[illegible]
Do	do	480	6	1,9[illegible]
Do	do	490	6	1,[illegible]
Do	do	490	6	1,[illegible]
Do	K-C-12	500	6	1,[illegible]
Do	do	525	6	2,[illegible]
Do	do	550	6	2,[illegible]
Do	do	575	6	2,[illegible]

During the first months of the past year it was observed that the K powders into which the largest amounts of ingredients of hygroscopic quality were incorporated stood least well exposure to moisture, dampness, or escaping steam. This fact was taken advantage of in subsequent modifications of the K processes to obtain a more permanent and more resisting material.

The effect of prolonged exposure of powders to be sent afloat to the higher temperatures that might prevail in magazines of modern war ships under normal conditions, such as arise during sojourns in the Tropics, or under the more unusual conditions caused by lack of or accidental stoppage of ventilation, or by excessive heat due to prolonged steaming under forced draft, have been and are yet being made subjects of careful study. To this end there has been constructed at the station a small artificial magazine, with the use of which it is endeavored to simulate temperature conditions that may prevail on shipboard. In obtaining a continuous record of conditions of heat exposure a thermograph, or self-registering thermometer, has at all times been used. The maintenance of the magazine temperature is effected through the necessary regulation of steam-heating apparatus, this work being continually attended to by an observer.

It is found that with careful adjusting any desired temperature between 90° F. and 130° F. (± 5° F.) may be maintained, under weather conditions existing at this station during the summer months, for periods of many weeks. In this way lots of fixed ammunition, made up with K powders, packed as issued for service, have been shown to stand an exposure to a temperature of 100° F. for six weeks without undergoing any alteration upon firing, either for velocities or pressures. This test was made in accordance with instructions from the Bureau of Ordnance, the temperature chosen being fixed upon as the result of examination of series of records of temperatures of magazines of ships in commission.

A copy of the report on this test is transmitted herewith.

Another lot of ammunition is now undergoing a temperature test of 120° F.

The principal work connected with powders for heavy ordnance and for R. F. guns that has occupied attention during the past six months has been the advancement from the stage of experimental output to that of incipient manufacture. The experimental machinery first

employed, and the simple devices which suggested themselves at the beginning as most readily adaptable for preparing small quantities of colloids, were evidently unsuited for economically producing a commercial output. The skill in manipulation, necessary to uniformity of result, which had been developed in connection with original experimental apparatus, was found not wholly transferable to the more economic devices that it was desired to introduce for large scale work. Each new step entailed a reconsideration of methods involved in preceding steps. It is now believed, however, that plans have been prepared and machinery developed to such a degree as to justify the expectation of an immediate economic output of smokeless or light-smoke powder, suitable for service use in R. F. guns and cannon.

It may be remarked here that the K powders now manufactured at this station are not absolutely smokeless. The quality of smokelessness being the most prominent feature of the difference in modes of action of the old and new powders, has been seized upon as the most important distinction between them. While there is an evident great gain in the fact that the object fired at is not obscured after firing, yet it is nevertheless believed that the chief advantage to be obtained from their employment will be found to be the doing away with of the necessity of elaborate sponging after each round of the heavier calibers. With powders of minimum residue, each heavy gun is thus placed in a measure in the condition of a rapid-fire gun.

Other advantages to be obtained from the employment of smokeless powders of the K type are:

(1) The gain in velocity, comparing the performances of charges of the two powders producing the maximum allowed bore pressures, of from 300 to 400 feet.

(2) A reduction in weight of charge, comparing charges of the two powders producing the maximum allowed bore pressures, of about two-fifths the weight of the original charge of black or brown powder.

The question of the most efficacious means of igniting charges of black or brown powders in the bore of the gun is being made a subject of study. To obtain uniform ballistic results through the combustion of a colloid it is necessary that each one of the similar forms or shapes into which the colloid charge is subdivided be simultaneously ignited upon all of its faces. This means that at the instant preceding discharge all interstices of cartridge case or powder chamber be filled with flame—burning gas under uniform conditions of temperature and pressure. To produce this flame there is needed a quick-burning ignition charge whose mode of explosive action is different from that of the primary or main charge. A fine-grain black powder has been experimentally satisfactory as an ignition charge, and might be employed with K powders, were it not for the fact that the smoke produced by its combustion is considerable.

A type of experimentally developed smokeless ignition charge, which seems to serve its purpose well when employed with K powders, has been provisionally adopted for use with charges of K powders for R. F. guns.

Development of small-arm powder.—While the chief efforts of the year have been directed to the economic development of a smokeless powder for use in cannon and R. F. guns, nevertheless work has been continued upon the preparation of a suitable powder for the 6-millimeter small arm.

It was realized that the best progressive powder for use in this weapon would be one designed upon the principle followed in making powders for the large guns; that is, a powder whose grains would bear in their

dimensions a definite relation to the caliber of the weapon. Following this idea, experimental powders have been prepared from time to time whose ballistic performance proved equal to those of powders from outside sources, giving the best results for the weapon. No sufficient quantity of these experimental powders has yet been made to afford knowledge of their keeping qualities and ballistic uniformity in the long run. Machinery is now in process of construction which will readily furnish quantities of small-arm powders large enough to permit an extended series of tests, from the results of which it is believed that a standard grain and standard grade of explosive may be quickly adopted.

VELOCITY RANGES.

Small-arm range.—This range is in excellent condition, and in almost daily use in determining the ballistic qualities of various kinds of small-arm powder or for testing the effects of variation of charge, weight of bullet, or length of barrel. Its location is most convenient, and its arrangement meets all the requirements of the purpose for which it is used.

R. F. gun range.—The possession of a velocity range for rapid-fire guns near this station has proved of great value in facilitating the work of powder development. The long delays, due to the difficulties connected with the transportation of explosive material, hitherto experienced in connection with results of tests of ammunition made at different points are now avoided; the effect of variations in processes of manufacture may be evaluated ballistically, so that an additional guide to uniformity has been secured.

INSTRUCTION.

The station is fully equipped for instruction of officers and seamen and for all practical work necessary to impart a full knowledge of the use of torpedoes. The prescribed course of instruction can be given with advantage at all seasons of the year, except during the winter, when ice makes into the harbor. The running of torpedoes, suspended during this period (except in cases of ships sent here to receive outfits or being inspected by the Board of Inspection and Survey), was resumed on April 1 of the present year. The exceptional runs noted were of Whitehead torpedoes with a temperature of water at 34° F., the torpedoes running satisfactorily.

Officers.—The instruction of officers qualifying for torpedo officers, inaugurated in May, 1893, has continued, the course embracing the following subjects: Study and lectures on the Whitehead and Howell torpedoes and practical exercises in assembling, disassembling, and adjusting them for running; care and preservation of torpedoes and accessories; practical exercises in running Whitehead torpedoes from launching tube and launching cage installed at testing station and from the *Cushing* under way; practical exercises in running Howell torpedoes from the *Stiletto* under way; study of torpedo-handling apparatus with practical exhibition of its operation; torpedo drill; study of torpedo directors with practical exhibition of their use; study of air compressors and practical work in assembling and disassembling them; general topics connected with torpedoes; visits to the torpedo works of the Hotchkiss Ordnance Company, at Providence, to inspect manufacture, and to the Howell torpedo testing station, at Tiverton, to witness adjustment runs of torpedoes.

The time devoted to the course for each detail has averaged fifteen working days. Six regular details, comprising 35 officers, have

been under instruction during the time covered by this report. One special detail from the War College, comprising 10 officers, has taken the full course. Two officers under individual orders have taken the full course. Two officers of the Revenue Marine, detailed from the War College, have taken a short course of six days.

The total number of officers under instruction during the year was 49.

Seamen.—The time allowed for instruction of seamen qualifying for seamen gunners was reduced on the 1st of January last from twenty-two weeks to seventeen weeks—except in case of those desiring to qualify in diving, who are allowed three weeks additional. The course of instruction has accordingly been modified by eliminating from it much of the theoretical part, and devoting nearly all of the time to instruction in the practical work which seamen gunners are expected to perform on board cruising ships.

The following topics are embraced in the course:

Electricity.—Elementary principles of electricity and magnetism; construction, management, and care of dynamos and search lights; practical work in wiring and testing for faults; care of circuits, lamps, signal bells, etc.; practical work in charge of dynamo; practical work in charge of dynamo engine; practical work in charge of electric-light plant, and practical work with search light.

Torpedoes.—Study of Whitehead and Howell torpedoes and practical work in assembling and disassembling them; preparation of Whitehead and Howell torpedoes for running; practical work in running torpedoes; practical work with air compressors; practical work with torpedo handling apparatus; torpedo drill; preparation of outfits for issue; care and preservation of torpedoes and accessories; service on board torpedo boat *Stiletto;* study of spar torpedoes; practical exercises in firing spar torpedoes from launches, and study of the nature of high explosives and the handling and care of same.

Diving (optional).—Three weeks; devoted to instruction of those who wish to qualify in this branch, and embracing the care and manipulation of apparatus and practical submarine work.

Every effort is made to render the instruction as thorough as possible, but it is found that, with a few exceptions of the brightest minds, it is impossible for the seamen to acquire a thorough knowledge of all of the points taught in the limited time allowed for the purpose. It is to be hoped that the exigencies of the service will, in the near future, permit the time now allowed for instruction to be increased.

From September 24, 1894, to September 7, 1895, 26 men have completed the course and been found qualified for seamen gunners, and 19 men are at present under instruction. Two chief gunners' mates have taken a two weeks' special course in automobile torpedoes.

The total number of men under instruction during the time covered by this report is 47.

MANUALS, ETC.

Much time and attention has been devoted to the preparation for publication and distribution to the service of such information as was deemed necessary and desirable for the use of officers who might be placed in charge of torpedoes on board ship.

The condition of the work is as follows:

Finished and issued to ships.—Description of Torpedo Directors, with Plates; Notes on Care and Handling, etc., Whitehead Torpedo; Nomenclature and Plates of Tubes, Tube Mounts, etc., Whitehead Torpedo.

Finished and submitted for the approval of the Bureau of Navigation.—Torpedo Drill Book, Whitehead Torpedo.

In preparation, nearly ready for issue.—Description of Howell Torpedo, with plates.

Proposed, will be prepared at an early date.—Notes on Care and Handling, etc., Howell Torpedo; Nomenclature and Plates of Tubes, Tube Mounts, etc., Howell Torpedo; Drill Book, Howell Torpedo.

SANITARY CONDITION.

The sanitary condition of the island continues to be excellent, there having been no disease during the past year attributed to local causes.

LIBRARY.

During the year 100 volumes have been added to the library, making a total of 3,855 volumes.

Very respectfully submitted.

G. A. CONVERSE,
Commander, United States Navy,
Inspector of Ordnance, Torpedo Station.

CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

NAVAL STATION,
Newport, R. I., October 5, 1894.

SIR: In compliance with instructions of the Bureau of Ordnance contained in its letters (No. 5048) of August 3 and 29, 1894, I have caused to be made a number of experiments to determine the distance at which the noise of approach of the *Stiletto* with the Howell torpedo in readiness for launching could be heard from a stationary vessel.

The experiments have been arranged in three groups, the first in the daytime, with the *Stiletto* at rest, by which the noise of the machinery of the boat was eliminated from the problem, and the distances were accurately determined; the second at night, with the *Stiletto* to windward of the observing boat and approaching or receding; and the third at night, with the *Stiletto* to leeward, approaching or receding.

All the experiments were made with No. 35 torpedo (shop number) in the *Stiletto's* deck tube. The shutter and breech door were closed and the motor had a covering of felt and oilskin. The tube was also covered in two of the experiments, as noted in the remarks. The general method was to start up the motor exhausting into the smoke pipe and on reaching 10,000 revolutions to shut off the steam without unclutching. The wheel runs down quickly under these conditions, about fifteen revolutions a second at the start, but it makes it possible to start up again by simply turning on the steam. When the motor is unclutched the wheel runs down more slowly (eight revolutions a second at the start have been estimated), and it is necessary to wait thirty to forty minutes for it to come to rest before it can be clutched again. This was therefore always the last experiment in any series.

In the running trials the method of observing was to anchor a launch in the outer harbor and run past it at different speeds and in different directions. The speed was obtained for each run by timing the boat over a known range, either before or after passing the observing launch, and sometimes on both sides, without touching the throttle. In the launch were four to six observers, one or two of whom were officers,

and the others seamen under instruction. Times were taken of the first sound of approach, of passing, and of losing the sound, and the character of the different noises was noted.

To aid in detecting the sound of approach, a large copper funnel was made use of. It was 4 feet long and 15 inches in diameter at the large end. The small end was fitted with two forms of earpiece, both of hard wood. One was intended to rest against the outside of the ear, the other to stick into the opening of the ear. The instrument was unanimously condemned. On shore, in a still place, the faintest sounds could be heard at quite a distance. In the launch the slight noises of the boat and the ripple of the water against the side deadened any sound that could not be heard by the ear alone.

The observers in the boat stated that it was difficult to separate the different noises heard. No hum was distinguished except when the motor was exhausting into the smoke pipe. The hum of the fly wheel when unclutched is apparently drowned by the noise of the machinery at any distance at which either alone could be heard at the speeds employed. The experiments with the boat at rest and those of last year show that the hum of the fly wheel alone carries 400 to 600 yards when there is no wind.

There was often a difference of opinion as to the first hearing of the sound, and there were a number of false alarms and noises that proved to come from other sources. The times as given were when the noise was assured.

The accompanying tables and remarks give the details of the different trials. As a general result the experiments show that the noise of the fly wheel and motor alone is no drawback whatever to the use of the Howell torpedo for torpedo boats, as the noise of the boat itself at any ordinary speed can be heard as far as the torpedo. The great drawback will be the question of oiling. Boats must keep their fly wheels spinning when expecting to encounter the enemy, as one minute or even a half minute to spin up is prohibitory under ordinary conditions. The torpedoes as now fitted probably have not sufficient oil supply to keep them running more than half an hour at full speed without danger. If a pipe or reservoir can be devised with an opening near the tail, by which oil can be forced in from the breech door while the wheel is spinning, and reach all the bearings, this objection to the use of the Howell torpedo in torpedo boats will be overcome.

Very respectfully,

GEORGE A. CONVERSE,
Commander, U. S. N.,
Inspector of Ordnance, Torpedo Station.

The COMMANDANT, U. S. NAVAL STATION,
Newport, R. I.

INCLOSURES.

Day trials—Stiletto at rest.

Consecutive number.	Date.	Noises.	Direction of wind, facing Stiletto, points.	Force of wind	Distance noises heard.	Time steam on motor.
					Yards.	*Minutes.*
1	Sept. 5	Motor exhaust fly wheel	12 left	4	400	20
2	...do	Motor (steam off) fly wheel	...do	4	280	.....
3	Sept. 27	Motor exhaust fly wheel	2 left	3	600	13
4	...do	Fly wheel alone	...do	3	500	.....

REMARKS.

No. 1.—Lost sound of exhaust at 190 yards and began to hear hum of fly whee which carried to 400 yards. Covering tube with carpets and canvas made litt difference in sound.

No. 2.—Fly wheel runs down very quickly with motor clutched. Revolutions motor 6,000, when lost sound at 280 yards. The fiber gears were found to be stripp on hauling back the torpedo. Torpedo sent to shop for repairs.

No. 3.—Torpedo returned from shop fitted with specially large oil cups in case t time of spinning was prolonged. Exhaust overpowers hum of fly wheel near b Began to hear hum at about 250 yards. Heard exhaust faintly at 600 yards.

No. 4.—Unclutched and picked up sound of fly wheel alone at 500 yards.

Night trials—Stiletto to windward.

Consecutive number.	Date.	Noises.	A. Approaching. R. Receding.	Speed.	Direction of wind, facing Stiletto, points.	Force of wind.	Time noises heard.	Distance noises heard.	Revolutions of fly wheel on passing.	Time steam on motor.
				Knots.			*M. s.*	*Yards.*		
10	Sept. 28	Boat and engine, motor, exhaust, fly wheel.	R	13.7	4 right	2	1 40	771	10,000	See No.
20	Oct. 1	.....do	R	14.1	4 left..	3	3 00	1,429	10,000	See No. 1
21	.....do ..	.....do	A	14.6	...do ..	3	2 25	1,192	(?) 9,600	2 m. 20 s
6	Sept. 27	Boat and engine, motor (steam off), fly wheel.	R	11.4	2 right	3	2 00	768	5,000	See No. 5
11	Sept. 28	.....do	A	15.1	4 right	2	1 25	723	8,500	2 m. 20 se
8	Sept. 27	Boat and engine, fly wheel.	R	11.4	2 right	3	1 55	736	(?) 8,400	See No. 7
14	Sept. 28	.....do	R	13.7	4 right	2	2 20	1,079	(?) 9,100	See No. 1
24	Oct. 1	.....do	R	14.1	4 left..	3	1 55	913	(?) 8,600	See No. 2
17	.....do ..	Boat and engine..	A	13.7	...do ..	3	1 40	771	.....	.....
25	.....do ..	.....do	A	14.1	3 left..	3	1 40	794	.....	.....

Night trials—Stiletto to leeward.

Consecutive number.	Date.	Noises.	A. Approaching. R. Receding.	Speed.	Direction of wind, facing Stiletto, points.	Force of wind.	Time noises heard.	Distance noises heard.	Revolutions of fly wheel on passing.	Time steam on motor.
				Knots.			*M. s.*	*Yards.*		
9	Sept. 28	Boat and engine, motor, exhaust, fly wheel.	A	13.7	12 left .	2	2 00	925	10,000	7 m. 40 sec.
19	Oct. 1	.....do	A	14.1	12 right	3	0 40	318	10,000	5 m. 30 sec.
5	Sept. 27	Boat and engine, motor (steam off), fly wheel.	A	11.4	14 right	3	0 10	64	5,000	2 m. 30 sec.
12	Sept. 28	.....do	R	15.1	12 left .	2	1 00	510	8,500	See No. 11.
22	Oct. 1	.....do	R	14.6	12 right	3	0 10	82	(?) 9,600	See No. 21
7	Sept. 27	Boat and engine, fly wheel.	A	11.4	14 right	3	0 20	128	(?) 8,400	3 m. 40 sec
13	Sept. 28	.....do	A	13.7	12 left .	2	0 55	424	(?) 9,100	3 m. 40 se
23	Oct. 1	.....do	A	14.1	12 right	3	0 25	198	(?) 8,600	3 m. 20 se
15	Sept. 28	Boat and engine...	A	14	16	2	0 25	197	.....	.....
16	Oct. 1	.....do	A	15.2	9 right	3	1 05	556	.....	.....
18	....do ...	.....do	R	13.7	12 right	3	0 40	308	.....	.....

REMARKS.

The night of September 27 was partly cloudy, with starlight; no moon; dark; clear atmosphere; sea smooth. The nights of September 28 and October 1 were entirely clear, but rather dark; no moon; sea smooth.

No. 5.—This was a surprise, observers expecting boat from another quarter.

No. 7.—Boat discovered by flame from smoke pipe at long distance. Observers differed by a half minute or more as to time of first hearing sound. Sound positive at time as given; appeared to be machinery and swash of water.

No. 9.—Boat first seen at about 200 yards after hearing noise for minute and a half. Light sparks from smoke pipe first visible.

No. 11.—Boat sighted, as before, about 200 yards distant, one minute after hearing sound.

No. 13.—Boat sighted 40 seconds after hearing noise and 15 seconds before passing. Swash and slight noise of machinery.

No. 15.—Boat sighted and heard at same time.

No. 16.—Boat discovered by flame.

No. 17.—Boat discovered by flame.

No. 19.—Boat discovered by sound before sighting.

No. 21.—Boat discovered by sound before sighting.

No. 23.—Boat seen and heard about same time. The tube in this experiment was covered with blankets, pieces of carpet, a tarpaulin cover, and a canvas boat cover. No sound heard except swash and noise of machinery, in which regard there was no difference from Nos. 7 and 13.

No. 25.—Boat discovered by flame.

TORPEDO STATION,
Newport, R. I., August 27, 1895.

SIR: I have the honor to submit the following report upon the six-weeks' heat test of K powders at 100° F. The test was conducted in accordance with instructions contained in the appended letter from the Bureau of Ordnance.

To carry out the provisions of the instructions, it was decided to construct a small artificial magazine, in which the desired degree of heat could be regularly and continuously maintained. For reasons of safety, it was deemed best to place the magazine in an isolated building. The necessary heat for this test was supplied by steam conducted into the building through pipes connected with a steam boiler about 100 yards distant, in which a pressure of steam was constantly maintained. The building in which the magazine was situated was a light frame structure previously used as a gun-cotton drying house, with floor dimensions of about 12 by 8 feet, and a clear height of 6 feet. The rear wall rested against an earthen embankment, while, facing the pathway to its entrance, a second bank formed a shelter against prevailing winds.

The magazine proper was erected in the direct center of the drying house, was built of tongued and grooved boards, and was lined with asbestus. The top consisted of a single lid, hinged horizontally at the rear. This whole structure occupied a rectangular space of about 5 feet (height) by 3 feet by 4 feet. In the front, near the level of the floor, was a small hinged trap or flue, by opening and closing which, in connection with raising and lowering the upper lid, a current of air capable of control could be passed through the magazine. By closing both flue and lid, all air circulation through the inner space was stopped.

Within the magazine, at the height of 2½ feet above the level of the floor, was placed a horizontal grating to receive the service cases of fixed ammunition to be tested. The steam piping was led in from the rear bank into the outer building, where it formed a coil, and was thence continued through the magazine, the exhaust passing out again through the building and connecting with a trap at some distance away.

HEAT-CONTROLLING APPARATUS.

In order to obtain a reliable and complete record of the temperatur conditions existing throughout the period covered by the experimen it was decided to install within the magazine an instrument that woul furnish automatically a continuous record of the degree of heat mai tained. For this purpose a thermograph or self-registering thermomete of the pattern used in the United States Signal Service for obtainin daily records of heat fluctuations, was employed. This instrument manufactured by Richard Frères, in Paris, the American agent bein J. P. Friez, of Baltimore, Md. The thermometric fluid is alcohol, whic is inclosed in a hermetically sealed and peculiarly shaped vessel bulb. When this vessel or bulb is heated, a strain is brought upon it such a way as to increase its contained volume. This strain is taken by a system of levers, which impart a motion to a pencil or pen poi bearing up a revolving cylinder. The record cylinder makes one re lution a week, and the lines of equal temperatures are described up it normal to its axis. With this apparatus a line of temperatures c responding to the heat effect of the atmosphere upon the curved b of the instrument is obtained.

In using the thermometer to obtain a verification of the maintena of a uniform temperature, the temperature itself had to be so controlle to cause the continuous registration of the same degree of heat. W the form of magazine adopted, it was found that, under weather c ditions prevailing at the torpedo station during the summer months, a uniform temperature of from 90° F. to 130 F°. (± 5° F.) could be ma tained for continuous periods of many weeks. The ruled record for furnished with the instrument permitted registrations up to 110° By a simple adjustment, which consisted in the lowering of the p point through alteration of the system of levers, a record up to 130° could be kept.

A standard mercurial thermometer was kept at all times by the sid of the thermograph as a check upon the indications of the latter.

The powder to be tested was the torpedo station smokeless, made u in rounds of 475 grams each, loaded into the cartridge cases in th usual manner, an ignition charge of black rifle powder being placed a the bottom of each case over the primer, and beneath the main charge

On June 15 twenty-two rounds of ammunition thus prepared, fillin two service ammunition cases, were exposed within the magazine to th temperature of 100° F. The eleven rounds contained in one case wer left intact until the expiration of the test period. At intervals a ce tain number of rounds were drawn from the other case and tested fo ballistic variations. An additional number of rounds were also fire independently at the time of commencement of the experiment, t determine the original qualities of the powder.

No evidences of change in the quality of the powder were noted a any time. Within the limits of precision of chronograph and pressur gauges employed the records of pressures and velocities at beginnin and end of test for a series of shots were practically identical.

Upon extracting the projectiles from rounds removed from the mag zine and inserting pressure gauges before firing, the powder was foun to give off a somewhat marked odor of camphor. This was readil accounted for as being due to volatilization of a portion of a sma quantity of camphor previously incorporated into the powder. Th powder itself, at the end of the test, withstood the heat test which i had been originally required to pass. No evidences of decompositio of any portion of the charge were noted for any round. The eleve rounds fired at the expiration of the six weeks' period at 100° F. agree

1

Monday
Tuesday
Wednesday
Thursday
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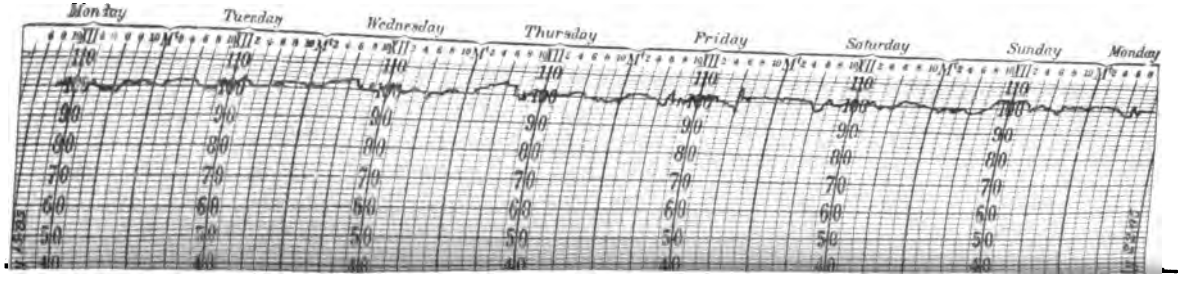
Saturday
Sunday
Monday
Regulating


Monday
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more closely in velocities and pressures than did those fired preparatory to commencing the experiment. This may have been due to the volatilization of small quantities of solvent remaining irregularly in the original powder.

The following are submitted with this report: (1) Letter from Bureau of Ordnance; (2) the firing sheets, giving particulars of ballistic tests; (3) photographic reproductions of continuous temperature records produced by the chronograph during the period of the experiment; (4) the record for velocities obtained from the chronometer bar of the chronograph showing the close correspondence of three rounds fired at the expiration of five weeks' heat exposure at 100° F. and of the eleven rounds fired at the expiration of six weeks' heat exposure at 100° F.

Very respectfully, JOHN B. BERNADOU,
Lieutenant and Assistant Inspector.

To Commander G. A. CONVERSE, U. S. N.,
Inspector of Ordnance, Torpedo Station.

BUREAU OF ORDNANCE,
Washington, D. C., March 22, 1895.

SIR: In order to determine the behavior of the torpedo station smokeless powder K under service conditions the Bureau desires that you will direct the inspector of ordnance in charge of the Naval Torpedo Station to load eleven rounds of 6-pounder ammunition exactly as for service, place them in a service box, and expose them for six weeks continuously to a temperature of 100°. No attempt should be made to render the cartridges or the box any more air-tight than they would ordinarily be.

For the purpose of comparison a few rounds should be fired for velocity and pressure at the commencement of the experiment and subsequently as advisable.

The reports of the temperatures of fixed ammunition rooms received from vessels cruising in the tropics show that the temperature has repeatedly remained above 90° for as much as thirty consecutive days.

The necessary material, if not on hand, will be supplied upon requisition.

Respectfully,

W. T. SAMPSON,
Chief of Bureau of Ordnance.

The COMMANDANT U. S. NAVAL STATION,
Newport, R. I.

Powder test No. 20.

[Sketches Naval Torpedo Station. R. F. G. Velocity Range, Rose Island. Gun No. 176, of 45 calibers length.]

No.	Date.	Projectile.		Weight of charge.	Remarks.	Observed pressure.	Observed velocity.	Muzzle velocity.
		Kind.	Weight.					
			Pounds.	*Grams.*			*Ft.-seconds.*	*Ft.-seconds.*
.....	June 24	Common cast-iron.	6	475	Before commencement of heat test; heat test begun June 25 at 9 a. m.	10.3	1,861	1,881
.....	...do....		6	475		11.4	1,939	1,959
.....	...do....		6	475		10.5	1,947	1,968
.....	...do....		6	475		11.1	1,825	1,845
					Average.....	10.8	.....	1,914
.....	Aug. 7		6	475	Fired at expiration of six weeks' exposure at 100° F.	11.2	1,900	1,921
.....	...do....		6	475		11.1	1,909	1,930
.....	...do....		6	475		11.4	1,900	1,921
.....	...do....		6	475		10.8	1,903	1,924
.....	...do....		6	475		11.2	1,905	1,926
.....	...do....		6	475		11.2	1,900	1,921
.....	...do....		6	475		11.1	1,900	1,921
.....	...do....		6	475		11.1	1,897	1,918
.....	...do....		6	475		11.7	1,909	1,930
.....	...do....		6	475		12	1,893	1,914
.....	...do....		6	475		11.2	1,884	1,904
					Average.....	11.3	.....	1,921

REMARKS.—Specific gravity at 15.5° C., 1.66; ignition temp., 169.3° C.; stability test, C. 71°, C. 45′ +; length of strip, 9.2 inches; thickness of strip, 0.034 inch; width of strip, 1.02 inches.

Respectfully, JOHN B. BERNADOU,
Assistant Inspector.

To the INSPECTOR IN CHARGE.

ANNUAL REPORT OF THE NAVAL GUN FACTORY, 1895.

UNITED STATES NAVY-YARD,
Washington, D. C., September 14, 1895.

SIR: I have the honor to submit the following report of the progress c work in the Naval Gun Factory during the past year:

GUNS.

Thirteen-inch B. L. R.—Only twelve guns of this caliber have so fa been authorized. These are now all completed, and all except on have been fitted with breech mechanisms. The fitting of the last gu will be completed about December 1.

Six of these guns have been proved. Four of these have been issued to the *Indiana*, one has been shipped to the *Oregon*, and the other will be shipped as soon as the car for its transportation can be obtained. The remaining two guns for the *Oregon* can be shipped as soon as they are proved.

The split-ring gas-check disks, referred to in the last report, after a successful trial have been fitted to all of these guns.

Twelve-inch B. L. R.—Of the six Mark I guns that were on hand at the date of the last report two have been shipped to the *Texas* and two to the *Puritan*. One of the remaining two is in use at the proving ground for testing armor, projectiles, etc. These two guns are also assigned to the *Puritan*.

The five Mark II guns, the forgings for which were being received at date of last report, have all been assembled, and three of them are entirely completed except the fitting of the breech mechanisms.

The breech mechanisms for these guns are of the same type as those on the 13-inch guns, but many improvements have been made in the design. The plug, which has six blanks and six threads, has been lightened and will be much more easily manipulated, while the amount of cutting in the gun in fitting is much reduced.

Four of these guns will be assigned to the *Iowa*.

Ten-inch B. L. R.—The nine guns which had not received their breech mechanisms at the date of the last report have now all been completed and all but one have been proved.

Four guns of this caliber have been issued to the *Maine*, four to th *Amphitrite*, and four to the *Monadnock*. Those for the last two vessel have the Mark V breech mechanism. One gun is at Bethlehem and tw are in store.

Another gun of this caliber is being made from the experiments 8-inch Hurst gun, hereinafter referred to.

Eight-inch B. L. R.—At the date of the last report there were in th shops twelve completed and eighteen partially completed guns of thi caliber constructed from forgings received prior to the last contrac with the Midvale Steel Company for sixteen sets of forgings. Thes guns have now all been completed. Two of them (40-caliber gun have been issued to the *Columbia* and *Minneapolis*, and four (35-caliber to the *Olympia*. These guns are all provided with trunnions.

The remaining twenty-four guns are fitted with the combined sleev and cylinder for the spring-return turret mounts. Eight of them hav been shipped to Cramp's shipyard for the *Indiana*. The remainin sixteen are assigned to the *Oregon* and *Massachusetts*, and will b shipped as rapidly as the mounts can be completed and the guns proved

Of the sixteen sets of forgings ordered from the Midvale company, it became necessary to reject all of the tubes and all but two of the jackets, on account of the small flaws described in the last report. Three tubes, replacing rejected ones, although not entirely free from defects, have been provisionally accepted during the year. One gun from these forgings has been completely assembled, and the other two tubes have been jacketed.

Experiments with the Sellers assembling furnace have continued during the year. The inner jacket of the nickel-steel gun was assembled with it after several trials, but the attempt to put on the long outer jacket with the furnace failed. Mr. Sellers has recently made some alterations in the furnace, and another effort will soon be made to get the outer jacket in place.

The 8-inch gun constructed from the designs of Mr. Hurst has been tried, but failed to give the good results hoped for by the inventor. The gun is of the external form and dimensions of a 10-inch gun, and it is now being converted into a gun of that caliber.

Six-inch B. L. R.—Six 40-caliber 6-inch guns were in progress at the date of the last report, two being of Mark III and four of Mark IV type. These guns have been entirely completed, except the breech mechanisms.

These guns are chambered for metallic ammunition, and are to be fitted as rapid-fire guns. The type of breech mechanism to be fitted to them has only recently been decided by the Bureau, which has adopted the Fletcher mechanism, and the work of fitting them is in progress.

A method of converting the Mark II B. L. R. into rapid-fire guns has been submitted to the Bureau of Ordnance, the Bureau having in contemplation the conversion of the guns of the *Chicago*, *Atlanta*, and *Boston*.

Five-inch B. L. R.—At the date of the last report there were twenty-six guns of this caliber under construction. Of this number eleven have been entirely completed. The other fifteen are completed, except as to their exterior dimensions; they are chambered, rifled, and have breech mechanisms fitted.

Of the eleven completed guns ten were issued to the *Lancaster*. The eleventh was fitted to the new type (Mark V) mount, and is now at the proving ground. The completion of the fifteen uncompleted guns will be a matter of but a short time, when the form of the body of the gun is settled upon, depending upon the results obtained with the Mark V mount.

One gun of this caliber (No. 54), which had been laid aside on account of a serious gouge made in the chamber while machining, has had a liner shrunk into its breech end. The gun has been subjected to severe proof firing, which it stood perfectly, and it is as efficient a gun as any in the service. This gun has been assigned to the *Detroit*, but it temporarily forms part of the naval exhibit at the Atlanta Exposition.

Gun No. 79 of this caliber developed a flaw in the chamber on final machining. The lining of the chamber of No. 54 having proved so successful, the Bureau directed that this gun should be treated in a similar manner, which has been done. This gun is yet to be proved.

A contract for twenty sets of forgings for 5-inch guns was concluded with the Bethlehem Company a few months ago, and about half of them have been delivered. Two guns have been partially assembled and the others are being machined. These guns are to be fitted with the Fletcher breech mechanism (all others, except Nos. 1 and 2, which are of the ordinary type, having the Dashiell mechanism), the forgings for which have been ordered.

Some slight changes have been made in the Dashiell breech mechanisms of the *Lancaster's* guns and those not yet issued. These changes are with a view to reducing the number of parts and to facilitate changing from percussion to electric firing. The modifications referred to do not affect the interchangeability of the parts of similar mechanisms.

Four-inch B. L. R.—No 4-inch guns have been manufactured during the year. At the date of the last report there were ten sets of forgings of the forty sets ordered from the Midvale Steel Company that had not been machined. These have since been machined, and the whole number has been rejected on account of the large number of defects that developed.

The Midvale Company has supplied twelve tubes and six jackets to replace those previously rejected. Of these, three tubes and one jacket, although not entirely free from defects, have been provisionally accepted.

The rejection of these forgings has seriously delayed the manufacture of the 4-inch guns for the *Monadnock*, *Puritan*, gunboats Nos. 7, 8, and 9, and the *Iowa*. The breech mechanisms (Dashiell type) for these guns are all completed, except the fitting and assembling of the parts.

Changes in the Dashiell breech mechanism, similar to those in the 5-inch gun above referred to, have been made.

Ten sets of forgings have been ordered from the Bethlehem Iron Company, and their delivery has begun. None of them have been machined. These guns are to be fitted with the Fletcher breech mechanism, the drawings for which are nearing completion.

B. L. R. guns manufactured and in progress.

	13-inch, 35 calibers.	12-inch, 35 calibers.	10-inch.		8-inch.			6-inch.			5-inch.		4-inch, 40 calibers.
			30 calibers.	35 calibers.	30 calibers.	35 calibers.	40 calibers.	30 calibers.	35 calibers.	40 calibers.	30 calibers.	40 calibers.	
Completed Sept. 15, 1894	10	8	23	2	5	26	2	123	6	6	2	58	68
Completed since that date	2	3	....	....	....	18	....	....	....	6	....	11	...
Total completed	12	11	23	2	5	44	2	123	6	12	2	69	68
Assembled and nearly completed	....	2	a 1	....	....	1	....	....	....	....	....	15	....
Partly assembled	....	....	....	....	....	2	....	....	....	....	....	2	....
Forgings in hand and ordered	....	....	....	....	....	13	....	....	....	....	....	18	50
Grand total	12	13	24	2	5	60	2	123	6	12	2	104	118

a Hurst gun in process of conversion.

MOUNTS.

Thirteen-inch turret mounts.—The four mounts for the *Indiana* were completed in June, and have been tested and shipped to Cramp's shipyard. Two of the mounts for the *Oregon* have since been completed, tested, and shipped to San Francisco. The other pair of mounts for the *Oregon* are now being erected, and will be ready for shipment about October 1. The mounts for the *Massachusetts* are well under way, the detail parts being practically completed, and it is hoped to ship them by December 1.

These mounts are all to be supplied with telescopic sights, which are nearing completion.

Twelve-inch turret mounts.—The mounts for the *Texas* have been issued and are installed in that vessel. The four mounts for the *Purita-*

ıave been delivered, except portions of one mount, which are in use at he proving ground. These can be issued in ten days after their return o the yard.

Telescopic sights have been fitted to all the above mounts.

Drawings for the 12-inch mounts of the *Iowa* have been completed ınd patterns for the larger castings are being made. These mounts ıre to be fitted with a rammer of new design, which can be worked ıther by an electric motor or by hand. One such rammer has been nade and successfully tested at the proving ground.

Ten-inch turret mounts.—During the year the second pair of mounts for the *Maine*, the second pair for the *Amphitrite*, and the first pair for the *Monadnock* have been completed, tested, and shipped. The second pair for the *Monadnock* has been completed and proved, and can be shipped as soon as part of one mount, now in use at the proving ground, is returned to the yard.

These mounts are all fitted with telescopic as well as bar sights.

Castings have been received for a 10-inch mount for the proving ground, and are now being machined.

Eight-inch turret mounts.—Eight 8-inch turret mounts for the *Indiana* have been completed, proved, and shipped. The eight mounts for the *Oregon* will be completed by October 15, and can then be shipped as rapidly as they can be proved. The eight mounts for the *Massachusetts* are well under way, and are to be completed about December 1.

These mounts are of the spring-return type, with combined recoil cylinder and sleeve. As first designed the elevating gear for these mounts involved a friction worm wheel, which permitted a slight depression of the breech of the gun at each fire. Although this change in elevation amounts only to from 2° to 5°, the gear was not satisfactory to the Bureau, and numerous experiments have been made with a rigid gear. In the last of these experiments the worm wheel was made of steel instead of bronze, and the cross shaft was made much stronger than the calculated strains demanded, but the gear was nevertheless deformed when the gun was fired. The Bureau has therefore directed that the gear with the friction disks be supplied to the three battle ships.

The mounts for the *Iowa* and the *Brooklyn* are to be of the same general design as those of the *Indiana*, but the deck lugs are of somewhat different design. Patterns for these new lugs have been completed and shipped to the founders.

All of these mounts are fitted, or will be fitted, with telescopic sights.

Six-inch mounts.—Three 6-inch C. P. mounts have been completed during the year, thus completing the whole number required of these mounts.

Two 6-inch rapid-fire mounts have been completed and tested at the proving ground, and six others are in progress. All the castings for these six mounts have been received, except five top carriages, two of which are to replace defective castings previously delivered. All the machine work has been done on the castings received, except that on the slides, which has been held up pending the settlement of the type of breech mechanism to be fitted to the guns. This has now been decided and the slides will be proceeded with, but there will still be delay from the slow delivery of the top-carriage castings.

One of these mounts, after trial and proof at the proving ground, has been sent to the Atlanta Exposition.

Five-inch R. F. mounts.—Thirteen 5-inch mounts, Mark IV, have been constructed during the year. Of these, ten have been issued to the *Lancaster*, one each to the *Marblehead* and *Montgomery*, and one, intended for the *Detroit*, has been sent to the Atlanta Exposition.

The three mounts last mentioned are fitted with telescopic sight the supports for which are secured to the oscillating slides by screw Six of the *Lancaster's* mounts are also fitted with telescopic sights, b in these the supports are fitted in sockets and are easily adjustab The other four mounts of the *Lancaster* are fitted with peep sights sockets which are interchangeable with the telescopic sights.

A sight adjuster for these mounts has been designed and made an issued to the *Lancaster*. It provides for the adjustment of the line o sight of the telescope at any time.

The new design of 5-inch mount (Mark V) mentioned in the report of last year has been completed and an experimental mount has been built. In this mount the gun recoils within the sleeve, the piston rod being carried by a band on the gun. The mount has been tried at the proving ground with favorable results, but the Bureau has not yet decided upon its adoption for the guns of the *Brooklyn*. As it is much lighter than the Mark IV mounts its adoption would result in saving considerable weight.

New steel oscillating slides have been fitted to the 5-inch mount of the *Marblehead* and part of those of the *Montgomery*. The remain ing slides for the *Montgomery* are nearly completed. The castings o those for the *Detroit* are in the shops, but have not been machined The forecastle guns of these ships are to be provided with shields of new design. These are nearly completed.

Four-inch R. F. mounts.—Thirteen 4-inch mounts, Mark III, hav been completed during the year. Of these six have been shipped t the *Alliance*, two to the *Minneapolis* to replace two Mark II moun returned here.

The two Mark II mounts returned from the *Minneapolis* are bein converted into Mark III mounts and are nearly completed. They wi be assigned to the *Monadnock*.

Six Mark III mounts are in hand, four being nearly completed. Th other two are awaiting castings.

Two of the Mark II mounts of the *New York* have been converte to Mark III.

A new design of roller bearing, which admits removing the roller by lifting the top carriage slightly, has been adopted and has bee fitted to some of the mounts last constructed.

A design for a pedestal mount has been approved by the Bureau and the drawings for it have been begun.

There are to be constructed thirty mounts for the *Iowa* and gunboats Nos. 7, 8, and 9, the type of which has not yet been decided.

Gun mounts manufactured and in progress.

	13-inch turret.	12-inch turret.	10-inch turret.	8-inch.		6-inch.			5-inch R. F.	4-inch R. F.
				Turret.	C. P.	Broadside, etc.	C. P.	R. F.		
Completed Sept. 15, 1894	1	5	12	8	18	21	98	.....	55	60
Completed since that date	6	3	8	8	.....	.....	3	2	14	13
Total completed	7	8	20	16	18	21	101	2	69	73
Nearly completed	2	.....	.....	8	.....	.....	.....	6	.....	6
Partly completed	4	.....	*a* 1	8	.....	.....	.....	.....	.....	2
To be manufactured	.....	4	.....	16	.....	.....	.....	.....	*b* 12	30
Grand total	13	12	21	48	18	21	101	8	81	*c* 111

a For Naval Proving Ground. *b* For the *Brooklyn*. *c* Four for the Hotchkiss Ordnance Company.

ELECTRIC-FIRING ATTACHMENTS.

All guns that have been completed during the year have been fitted for electric firing.

Electric-firing attachments have been completed and issued for the B. L. R. guns of the *Columbia*, *Olympia*, *Raleigh*, *Cincinnati*, *Monterey*, *Minneapolis*, *Amphitrite*, and *Texas*, and those for the *Maine*, *Puritan*, *Monadnock*, *Terror*. *Indiana*, *Massachusetts*, *Oregon*, *Iowa*, *Brooklyn*, and gunboats Nos. 7, 8, and 9 are nearly completed.

They have also been supplied to all the 5-inch R. F. guns in service and are nearly completed for all 4-inch R. F. guns.

SECONDARY BATTERY MOUNTS.

There have been manufactured during the year:

Sixty-nine 6-pounder recoil mounts.
Five 1-pounder recoil mounts.
Two 3-pounder rail mounts.
Forty-one 6-pounder cage stands.
One 3-pounder cage stand.
Fifty-three 1-pounder cage stands (boat).
One 1-pounder cage stand (ship).
Thirty-one 1-pounder deck circles.
Six 1-pounder rail sockets.
Thirty 6-pounder rail sockets.

Fifty-one of the 6-pounder recoil mounts are fitted for shields.

AMMUNITION HOISTS.

The 8-inch ammunition hoists for the *Indiana* and one of those for the *Oregon* have been completed. The other three for the *Oregon* are well in hand and will be completed by October 15. Those for the *Massachusetts* will be completed about December 1.

All 10-inch, 12-inch, and 13-inch turret ammunition hoists have been or will be completed with the mounts for which they are intended.

PROJECTILES.

The following projectiles have been machined, banded, and otherwise prepared for service, viz:

Armor-piercing projectiles:		
13-inch	281	
12-inch	224	
10-inch	57	
8-inch	526	
6-inch	277	
5-inch	252	
4-inch	26	
		1,643
13-inch semiarmor-piercing projectiles	9	
12-inch deck armor-piercing projectiles	40	
		49
Cast-steel shot:		
12-inch	2	
10-inch	2	
8-inch	2	
4-inch	4	
		10
Cast-steel shell:		
13-inch	2	
8-inch	2	
		4

Forged-steel shell:		
6-inch	8,086	
5-inch	596	
4-inch	11,976	
		20,[illegible]
Cast-iron shell:		
12-inch	51	
10-inch	89	
8-inch	323	
4-inch	149	
		612
Total		22,976

There have also been manufactured for the United States Army 50 3-inch cast-iron shot, 300 3-inch cast-iron shell, and 300 3-inch shrapnel.

TORPEDO LAUNCHING TUBES.

Four torpedo launching tubes for the boats of the *Maine* and *Texas* have been constructed from the designs of the Bureau. They have been issued after successful test.

MISCELLANEOUS.

A series of experiments with different designs of percussion base fuses has been made and a standard fuse of this character has been adopted for the service.

There have been manufactured during the year 3,000 Schenkl fuses, 3,000 adapters, 2,500 base fuses, 325 base plugs, and 90 experimental fuses.

One thousand eight hundred and sixty vent-sealing friction primers and 500 impulse primers have been completed, and stocks have been made for 4,700 vent-sealing percussion and 3,780 vent-sealing friction primers.

There have been completed 68 gunlocks with spare parts, and 2[illegible] others are nearing completion. The cost of these locks has been reduced to one-half the former cost.

Two complete sets of reloading and reforming tools for the minor calibers of rapid-fire guns, and those previously made, have been modified and remodeled.

Four sets of reloading tools for 4-inch and 5-inch rapid-fire guns have been made. A machine for reforming the cartridge cases of these calibers has been made and successfully tested.

There have been made 20,491 cartridge bags, 52,988 burster bags, 11[illegible] cutlass scabbards, 200 singlesticks, and the necessary sponges, rammers, etc.

GUN FORGINGS.

Reference has previously been made in this report, as well as in the report of last year, to the defects in a large number of gun forgings that have been rejected during the past year. As stated in my last report, these defects "take the form of splits, some being so fine and short as to be observed with difficulty, while others are from one-fourth to one-half inch in length. The flaws have usually very little depth but they seem to be distributed throughout the mass of the forgings, so that while those observed on one cut with a tool will disappear at the next cut another lot will appear." In some of the larger ones sand or clay has been found, while others apparently contain slag.

The manufacturers contend that these defects are inherent in the process of making these forgings, and that all forgings contain them to a greater or less extent. It is asserted, however, by the master mechanics and workmen in the shops, as well as by the inspecting officers, that they have not been found heretofore in the forgings received from other makers. It is not denied that occasional flaws are encountered, but these, while often long and deep, are few in number and widely separated, and they come out in machining. The prominent features of those in the Midvale forgings are that they occur not only singly in great numbers, but also in clusters, and that while taking a cut off the metal removes those in sight a new lot is developed.

The contention of the Midvale Company that these defects are inherent in the method of manufacture is supported, to some extent, by the fact that in the lot of Bethlehem forgings last received examples of similiar splits have been found. Of four 5-inch tubes received from the Bethlehem Company that have been machined, two have been found to contain a small number of splits similar to the more minute defects observed in the Midvale forgings, but none of these were in the bore. One Bethlehem tube contained a number of flaws much more serious than any found in the Midvale forgings, but of an entirely different character, and this tube was rejected. Five Bethlehem jackets have been machined, of which two have developed the splits in small numbers, while the others are free from them. The conclusion to be drawn from these facts is that while these splits are liable to occur in all forgings, they do not necessarily so occur.

To determine the extent to which the splits detract from the strength of the metal, one of the Midvale forgings (a 4-inch jacket) that showed a large number of them was, at the request of the company, cut into four pieces, the cuts being made at points where the splits appeared to be most numerous. An annular slice of the jacket was taken at each of the three cuts and from each slice six test specimens were taken. The results obtained in the testing machine was generally considerably in excess of the minimum requirements of the Bureau of Ordnance, but in two cases the elongation obtained from the specimen was decidedly below the average for all the specimens. In each of these two specimens the fracture showed that the metal was not continuous.

The most serious results of these splits in a gun forging was shown by an examination of the 4-inch gun completed from the defective forgings, as stated in the report of last year. After 154 rounds had been fired from this gun the chamber about the compression slope and the bore for about 18 inches from the slope, showed that the splits that had originally existed had been enlarged, and some new ones that had not previously been observed had developed. The largest of these was one-quarter of an inch long and deep enough to permit a wax impression of it to be taken.

The Bureau has decided that when the splits are found in forgings, if they are widely separated and do not occur in aggregations, the forgings are to be accepted.

NEW SHOPS, ETC.

The fitting of the new forge shop and the work of moving hammers, etc., from the old shop was completed in December last. The new shops began operation in January. The preparation of the old shop for the reception of the cranes, machine tools, etc., of the gun carriage shop extension was immediately begun, and that shop was in operation in

April, although some of the new tools were not received until Jul This extension of the gun-carriage shop was a much-needed improv ment.

When the 13-inch mounts of the *Massachusetts* are completed (abo December 1), these being the last of the heavy mounts until those 1 the *Iowa* are erected, it is intended to remove the scaffolds, etc., fro the room now called the erecting shop and transfer the erection heavy mounts to the southwest corner of the gun-carriage shop. Thi will make available the traveling cranes in that shop for lifting in plac the heavy pieces of these mounts. It will also provide space for tools it is intended to take out of the present secondary mount shop.

The Bureau of Yards and Docks will ask for an appropriation to tear out the second floor of the west side of the gun-carriage shop, now occupied as a secondary mount shop. This floor is very insecure, and although it has been strengthened as far as possible, it is still overtaxed with the weight it has to support. Besides, it darkens the shop below it, requiring the use of artificial light except on the brightest days. The improvement that would be made by the removal of the upper floor would be very great.

Should this improvement be made it will be necessary to remove th tools from the upper floor and redistribute those in the present west gun carriage shop. It is estimated that to make these changes and t extend the 10-ton crane ways, put in line shafting, pulleys, erectin plates, etc., and provide heating arrangements and engine power, wil cost $25,000, and an estimate for this amount has been submitted.

At the last session of Congress an appropriation was made for a ne roof to the foundry. The estimate submitted from this yard conten plated raising the walls and remodeling the foundry; but, while th entire sum necessary for this purpose was appropriated, the appropri tion was so worded that the money could not be used. It is unde stood to be the purpose of the Bureau of Yards and Docks to have th error rectified in the next appropriation bill.

Should the amount asked for be reappropriated and the foundr remodeled, a traveling crane and other cranes, new cupolas and blov ers, elevators, and other appliances of a modern foundry should l installed. An estimate for this purpose ($65,000) has been submitte

WORKING FORCE.

The completion of the guns for the ships already authorized and th rejection of so large a proportion of gun forgings has caused a gradu reduction to be made in the number of workmen employed in the gu shop. The reduction has now reached a point when any further dimin tion of the force will necessitate the discharge of workmen whos experience in this line of work renders them most valuable men. Fo tunately the gun work in hand and in prospect, if the forgings can b promptly delivered, will be sufficient to keep employed throughout th fiscal year the present reduced force in the gun shop. It is to b remarked, however, that the cost of the production of the guns turne out under the present conditions must be considerably increased ov that of the guns manufactured while the shop was at work to its fu capacity.

The gun-carriage shop is at present working to its full capacity, b when the mounts of the *Oregon* and *Massachusetts* are completed (abo December 15) there will remain to be manufactured only those for t *Iowa* and for the gunboats. A considerable reduction of the force this shop will then become necessary.

As illustrating the capacity of the shops when working under ordinary conditions, the following table showing the vessels supplied with armaments during the three years from January 1, 1893, to December 31, 1895, is inserted:

Armaments supplied to ships from the Naval Gun Factory during the three years from January 1, 1893, to December 31, 1895.

Name of vessel.	Type.	Main battery.							Secondary battery mounts.				
		4-inch.	5-inch.	6-inch.	8-inch.	16-inch.	12-inch.	13-inch.	6-pounder.	3-pounder.	1-pounder.	47 mm.	37 mm.
Olympia	Steel protected cruiser		10		4				14		6		
Texas	Armored battle ship			6			2		12		6		4
Maine	Armored cruiser			6		4			8		8		
Cincinnati	Steel cruiser		10	1					8		4		
Raleigh	do		10	1					8		4		
Montgomery	do		9						6		2		
Detroit	do		9						6		2		
Marblehead	do		9						6		2		
New York	Armored cruiser	12			6				8		4		
Puritan	Armored monitor	6					4		2	4			4
Amphitrite	do	2				4			2	2			2
Monadnock	do	2				4			2	2			2
Terror	do					4			2	2			2
Machias	Steel gunboat	8							4		2		
Castine	do	8							4		2		
Indiana	Armored coast-line battle ship.			4	8			4	20		6		
Massachusetts	do			4	8			4	20		6		
Oregon	do			4	8			4	20		6		
Columbia	Steel protected cruiser	8		2	1				12		4		
Minneapolis	do	8		2	1				12		4		
Alliance	Training ship	6											
Essex	do	6											
Lancaster	do		12										
Totals		66	69	30	36	16	6	12	176	10	68		14

INSTRUCTION.

The instruction of the seamen was under the charge of Lieut. B. W. Hodges, with Gunner Messenger as assistant, until December 13, 1894, when the men were moved from the *Dale* to the seamen's quarters in the yard. On that date Lieutenant Hodges was detached and Ensign Benton C. Decker was placed in charge of the instruction. Gunner Messenger was detached April 16, 1895.

On July 1, 1895, Lieut. Commander G. Blocklinger relieved Ensign Decker of the instruction and was relieved from other ordnance duties.

During the year the men have been provided with the latest ordnance publications for their text-books. By direction of the Bureau of Navigation, the period allotted to instruction has been reduced from twenty-six to seventeen weeks, the reduction being made by cutting out of the course such parts as might be acquired on board ship.

On September 1, 1894, there were 22 men under instruction; during the year 58 men have reported. There have been transferred to Newport for further instruction 45 men; 5 men to general service; 4 men discharged; 1 man deserted; 1 man transferred to the Naval Hospital, and there are now under instruction 24 men. One man who was ordered to report from the *Vermont* did not do so, and was declared a deserter.

Twenty-one officers have been under instruction in ordnance during the year.

PERSONNEL.

The following officers are performing ordnance duties:

Lieut. Commander E. H. C. Leutze: General duty in shops; installation of machinery, target backings, and all outside work.
Lieut. Commander Andrew Dunlap: Senior member of board of inspection.
Lieut. G. Blocklinger: In charge of instruction of seamen.
Lieut. J. H. Moore: 8-inch guns, mounts, and equipments.
Lieut. T. M. Potts: 10-inch, 12-inch, and 13-inch guns, mounts, and equipments.
Lieut. T. S. Rodgers: 5-inch and 6-inch guns, mounts, and equipments; torpedo work, pressure gauges, electrical firing attachments.
Ensign B. C. Decker: 4-inch guns and mounts, locks and primers, secondary batteries, projectiles, and fuses (temporarily).
Gunner J. J. Walsh: Miscellaneous articles of equipment, packing and shipping manufactured articles, in charge of magazine at Bellevue.

Lieuts. Herbert Winslow and W. L. Rodgers were transferred to the Naval War College June 1, and are to be detached. Lieuts. Albert Gleaves, J. H. L. Holcombe, and Stokeley Morgan, and Gunners William Walsh and F. C. Messenger have been detached during the year. These officers have all rendered valuable service.

The professional ability and indefatigable attention to duty of Lieut. Commander E. H. C. Leutze require special mention.

The work in the chemical laboratory has been performed expeditiously and accurately by the chemist, Mr. John Westesson. During the year Mr. Westesson has made 215 analyses of steel, 40 analyses of coal for the Bureau of Equipment, 180 other analyses, 45 moisture tests of powder, and has examined and tested all paints, oils. and other materials purchased for every department of the yard.

Very respectfully,

THEO. F. JEWELL,
Commander, United States Navy,
Superintendent Naval Gun Factory

COMMANDANT NAVY-YARD,
Washington, D. C..

ANNUAL REPORT OF THE INSPECTOR OF ORDNANCE.

OFFICE OF INSPECTOR OF ORDNANCE,
Hartford, Conn., July 1, 1895.

SIR: In obedience to the Bureau's orders, I have the honor to submit the following report on the manufacture and inspection of arms, ammunition, and other ordnance material within the district under my charge for the year ending June 30, 1894:

The district embraces the following places of manufacture:

A. *American Projectile Company, Lynn, Mass.*—Steel common shell, shrapnel, armor-piercing shell for minor-caliber rapid-fire guns, and time fuses for 4, 5, and 6 inch shrapnel.

B. *Winchester Repeating Arms Company, New Haven, Conn.*—Subcontractors for Hotchkiss ammunition: large caliber cartridge cases, Hotchkiss and small-arm ammunition of all kinds.

C. *Union Metallic Cartridge Company, Bridgeport, Conn.*—Subcontractors for Driggs ammunition: Driggs and revolver ammunition.

D. *Hotchkiss Ordnance Company, Providence, R. I.*—Mounts for Hotchkiss rapid-fire guns, field carriages, limbers, and drill cartridges.

E. *Pratt & Whitney Company, Hartford, Conn.*—Subcontractors for Hotchkiss rapid-fire guns: Hotchkiss rapid-fire guns, 6-millimeter small-arm barrels, gauges, and experimental work.

F. *Colt's Patent Firearms Manufacturing Company, Hartford, Conn.*—Revolvers.

G. *J. W. Frazier, New York, N. Y.*—Agent for sale of Lee rifles and equipments.

H. *J. B. Chapmam & Co., Springfield, Mass.*—Powder tanks.

I. *Henry A. Brown, Springfield, Mass.*—Revolver holsters and cartridge boxes.

The inspection was under the charge of Ensign A. C. Dieffenbach, U. S. N., until January 25, 1895, on which date he was relieved by me.

The following table shows: In Column I, the material remaining undelivered on July 1, 1894; in Column II, stores ordered during the fiscal year; in Column III, the year's deliveries; in Column IV, material still to be delivered on orders placed prior to this date.

Material.	I.	II.	III.	IV.
A.—American Projectile Company.				
6-pounder armor-piercing shell	9,750	.....	2,750	7,000
6-inch steel common shell	1,500	.....	670	(*a*)
Experimental time fuses	50	.....	50	.....
3-pounder tubular common shell	100	.....	100	.....
6-pounder tubular common shell	100	.....	100	.....
4-inch steel common shell	2,490	.....	2,490	.....
5-inch steel common shell	500	.....	500	.....
8-inch steel common shell	1,500	.....	.....	(*b*)
10-inch steel common shell	50	.....	.....	(*b*)
12-inch steel common shell	100	.....	.....	(*b*)
4-inch wrought-steel shrapnel	1,000	.....	1,000	.....
5-inch wrought-steel shrapnel	1,000	.....	1,000	.....
6-inch wrought-steel shrapnel	2,000	.....	1,500	500
Point time fuses for shrapnel	.....	4,000	.....	4,000
B.—Winchester Repeating Arms Company.				
(a) *Company's material.*				
2-inch cartridge cases	2,975	.....	63	2,912
5-inch cartridge cases	3,152	18	3,170	.....
6-inch cartridge cases	2,999	.....	1,426	1,573
6-inch cartridge cases, alluminium bronze	.....	10	.....	10
6-millimeter cartridges	20,000	35,500	56,100	.....
6-millimeter cartridge cases and bullets	.....	1,000	1,000	.....
6-millimeter cartridge cases, aluminium bronze	.....	1,000	100	900
6-inch mouth cups	.....	3,500	1,556	1,944
S. S. receivers	.....	6	6	.....
S. S. rifles, 22 caliber	.....	2	2	.....
Extractors for 22-caliber rifle	.....	6	6	(*c*)
No. 2½ primers	.....	1,000	1,000	.....
45-caliber ball cartridges	.....	74,800	25,000	49,800
45-caliber blank cartridges	.....	4,500	.....	4,500
45-caliber dummy cartridges	.....	1,000	.....	1,000
45-caliber reloading tools	.....	1	.....	1
22-caliber short-ball cartridges	.....	50,000	50,000	.....
Electric primers	.....	200	200	.....
Hotchkiss 1, 3, and 6 pounder primers	.....	6,150	6,150	.....
W. R. A. 4, 5, and 6 inch primers	.....	1,100	1,100	.....
Wads for 4, 5, and 6 inch primers	.....	1,000	1,000	.....
(b) *Hotchkiss ammunition.*				
6-pounder loaded rounds, armor-piercing shell	.....	900	900	.....
1-pounder loaded rounds, armor-piercing shell	.....	500	500	.....
1-pounder loaded rounds, common shell	.....	120	120	.....
6-pounder common shell	.....	617	617	.....
1-pounder armor-piercing shell	13,634	1,600	15,234	.....
6-pounder cartridge cases	7,959	.....	7,959	.....
1-pounder saluting rounds	.....	180	180	.....
6-pounder wads	.....	617	617	.....
Outside base fuses	16,965	170	17,135	.....
Inside base fuses	20,871	1,746	22,617	.....
Point fuses	10,073	1,233	11,306	.....
C.—Union Metallic Cartridge Company.				
(a) *Driggs ammunition.*				
6-pounder loaded rounds, steel shell	5,000	.....	2,000	3,000
3-pounder loaded rounds, steel shell	2,000	.....	700	1,300
1-pounder loaded rounds, steel shell	.....	1,000	.....	1,000
6-pounder cartridge cases and details	10,000	.....	600	9,400

a Order canceled. *b* Contract canceled. *c* Rejected.

Material.	I.	II.	III.	I
C.—Union Metallic Cartridge Company—Continued.				
(a) *Driggs ammunition*—Continued.				
1-pounder cartridge cases and details	4,701	.....	4,701	.....
6-pounder loaded rounds, common shell	.....	1,000	1,000	.....
3-pounder loaded rounds, common shell	.....	1,000	.....	1,000
1-pounder loaded rounds, common shell	.....	560	560	.....
1 pounder canister	.....	60	60	.....
1-pounder saluting rounds	.....	240	240	.....
Driggs base fuses	.....	2,963	2,963	.....
Primers for 1-pounders	.....	250	250	.....
Wads for 1-pounders	.....	1,000	1,000	.....
(b) *Hotchkiss ammunition.*				
6-pounder loaded rounds, steel shell	.....	100	.....	100
3-pounder loaded rounds, steel shell	.....	1,000	500	500
(c) *Company's material.*				
38-caliber revolver ball cartridges	.....	28,000	28,000	.....
38-caliber dummy cartridges	.....	1,020	1,020	.....
45-caliber rifle ball cartridges	.....	60,700	60,700	.....
45-caliber rifle blank cartridges	.....	7,000	7,000	.....
45-caliber rifle dummy cartridges	.....	1,000	1,000	.....
45-caliber reloading tool	.....	1	1	.....
22-caliber short ball cartridges	.....	50,000	50,000	.....
D.—Hotchkiss Ordnance Company.				
1-pounder hydraulic-top carriages	18	4	22	.....
1-pounder cage stands	.....	3	3	.....
1 pounder deck circles	.....	6	6	.....
1-pounder field carriages	.....	2	2	.....
1-pounder limbers	.....	2	2	.....
6-pounder hydraulic-top carriages	10	1	11	.....
6-pounder cage stands	.....	1	1	.....
6-pounder deck circles	.....	1	1	.....
3-pounder top carriages	.....	1	1	.....
3-pounder cage stand	.....	1	1	.....
3-pounder deck circle	.....	1	1	.....
3-pounder shield	.....	1	1	.....
1-pounder recoil springs	.....	6	6	.....
1-pounder training arms	.....	2	2	.....
6-pounder drill cartridges	.....	10	10	.....
1-pounder heavy drill cartridges	.....	30	30	.....
37-millimeter drill cartridges	.....	47	47	.....
E.—Pratt & Whitney Company.				
(a) *For Hotchkiss Ordnance Company.*				
6-pounder rapid-fire guns } With accessories and spare parts.	10	1	11	.....
3-pounder rapid-fire guns } With accessories and spare parts.	.....	1	1	.....
1-pounder heavy rapid-fire guns } With accessories and spare parts.	18	27	20	25
6 pounder sights	10	.....	10	.....
1-pounder sights	18	.....	18	.....
6-pounder firing points	.....	9	9	.....
3-pounder firing points	.....	13	13	.....
1-pounder firing points	.....	19	19	.....
37-millimeter firing pins	.....	6	6	.....
(b) *Company's material.*				
Threads gauges, set	1	.....	1	.....
6-millimeter rifle barrels	19	5	24	.....
F.—Colt's Patent Firearms Manufacturing Company.				
.38-caliber D. A. revolvers	.....	2,382	1,741	641
Revolver spare parts	.....	2,000	.....	2,000
G.—J. W. Frazier.				
Lee magazine rifles, caliber .45, with equipments	.....	28	28	.....
H.—J. B. Chapman & Co.				
13-inch powder tanks	.....	498	.....	498
12-inch powder tanks	.....	840	.....	840
10-inch powder tanks	.....	959	900	59
8-inch powder tanks	.....	3,130	720	2,410
6-inch powder tanks	.....	1,187	.....	1,187
I.—Henry A. Brown.				
Revolver holsters	.....	65	25	40
Revolver cartridge boxes	.....	25	25	.....
Miscellaneous.				
Leggings, pairs	.....	25	25	.....
Aluminium bronze for 6-inch and 6-millimeter cartridge cases	.....	.....	.....	(a)

a Delivered.

A. *American Projectile Company, Lynn, Mass.*—This company has, during the year, completed all orders for projectiles, excepting those for armor piercing 6-pounders and 6-inch steel common shell.

After about one-third of the order for the latter had been completed it was found to be impossible to duplicate the stock that the company had been previously using, and manufacture had to be discontinued.

The difficulties attending the production of an armor-piercing 6-pounder shell which should satisfy all the ballistic requirements have been overcome and the company is now making regular deliveries of these projectiles.

Certain changes have been introduced into the process of manufacture with a view to cheapening the shell without impairing its ballistic qualities.

Trouble has long been experienced in satisfactorily bursting the minor caliber rapid-fire armor-piercing shell with an outside base fuse. Failures to burst were generally supposed to be due either to the unscrewing of the fuse, which had a right-hand thread, or to its blowing out bodily. During the course of firing tests at this company's proving ground at Riverside, Mass., it became evident that neither of these causes was the true one, but that the fuses ruptured at the base of the plunger cavity owing to the admission of powder gas from the shell through the flash holes in the screw cap of the fuse.

A simple gas check was devised by the company, consisting of a thin copper disk held over the screw cap by a central brass screw. The pressure of the fulminate flame rolled this disk back from the flash holes, while the counter pressure from the bursting charge in the shell pressed it back firmly on the head of the fuse, thus preventing the entrance of gas into the interior.

After the adoption of this gas check the only failures to explode, of which the percentage was very small, were due to rupture of the walls of the fuse body.

The experimental time fuses ordered from this company during the preceding year having proved, on test, the practicability of the design, an order for 4,000 was placed and, after considerable experimenting with a view to improving the fuses and insuring greater accuracy of graduation, the company is nearly ready to begin deliveries on the order.

An ingenious method of testing the fuses for time of burning was devised, in which all service conditions were obtained except the condition of actual flight.

The fuse is dropped from a height of about 20 feet upon a heavy iron block, the moment of detonation of the primer and the final explosion of the fuse being registered by a chronograph. The time of burning has, in almost all cases, come within the prescribed tolerance of one-fourth second.

The first cutters supplied with these fuses not having been found strong enough, a twist drill has been used latterly and will, it is believed, prove entirely satisfactory.

B. *Winchester Repeating Arms Company, New Haven, Conn.*—The principal work done by this company during the year has been on 6-inch cartridge cases and 6-millimeter small-arm ammunition

A satisfactory mouth cup for assisting in checking the escape of gas past the mouth of the 6-inch case, was obtained after experimenting with various forms; the cup decided on finally has a depth of 2 inches and a thickness of from 0.05 to 0.0625 inch; a bead about 0.05 inch wide is worked around the body, giving the cup a maximum external diameter about 0.005 inch greater than the internal diameter of the mouth of the

case. Water-tightness of the assembled case is insured by filling the small annular space between the body of the cup forward of the bead and the mouth of the case with shellac.

Some of the electric primers sent to the proving ground at Indian Head having failed to fire, they were found, on examination, to contain no powder, the wads having apparently been dislodged either in process of assembling with the case or in transportation; an improved form of crimp for the mouth of the primer was adopted, since when no reports of similar failures to fire have been received.

The principal difficulty now met with in the manufacture of these primers lies in the varying quality of the bridge wire; the tolerances permissible in the physical and electrical dimensions of the wire used are very small, and the greater part of the failures to fire can be traced to this cause. A new supply of standard wire will soon be in possession of the company, and by its use and a rigid inspection of all parts, a practically perfect primer is expected to be produced. It will be found, in service, however, that great care must be exercised to see that the contracts are perfectly clean if certainty of fire is to be assured.

The second order for 5,000 5-inch cartridge cases was completed early in the year.

The manufacture of 3-inch cartridge cases has not advanced since the date of the last report from this office. The cases experimented with having proved inefficient in checking gas at the mouth, it was thought desirable to reduce the diameter of the chamber of the gun. Pending a decision in this matter, the manufacture of the cases was suspended. The company is ready to complete the order for 3,000 whenever the Bureau desires.

The 6-millimeter ammunition has been still further improved during the year, and the lateral and longitudinal ruptures of the cases, which were frequent in the first lots of experimental cartridges, are now of rare occurrence.

The rimless case has been developed and several thousand rounds of ammunition with this case furnished for small-arm trials. It has not given quite as good results as the rimmed case, but the failures noted are believed to have been due largely to the high pressures obtained from the powder used in loading.

A few minor faults in the cases and bullets, developed in the course of firing upward of 30,000 rounds, have been eliminated by improved methods of manufacture and increased care in the inspection.

Aluminium bronze has been experimented with by this company as material for small-arm cartridge cases, but the results have not been such as to justify the supposition that its use could be made a commercial success, the percentage of loss of material due to the metal sticking to the dies being excessive. It is possible that this loss could be greatly reduced when greater familiarity with the metal was acquired, but its advantages over brass are problematical.

No report of the behavior of the cases on firing has been received.

The use of a bullet lighter than the adopted standard of 135 grains has been considered, and a number of short bullets of the desired weight have been delivered at the Naval Proving Ground for test.

All outstanding orders for Hotchkiss ammunition were completed early in the year and only a few small orders have been placed since.

All armor-piercing shell furnished by this company have been of old design, with inside base fuses, the manufacture of shell to the new specifications and fitted with outside fuses not having been undertaken.

The capacity of the plant has not materially changed from that given in the report from this office for the year ending June 30, 1893. The following increase of daily output has been made possible by additional machinery and improved methods:

1-pounder cases, from 325 to 500.
3-pounder cases, from 160 to 200.
6-pounder cases, from 160 to 200.
1-pounder gas checks and inside fuses, 90 to 110.

C. *Union Metallic Cartridge Company, Bridgeport, Conn.*—A few deliveries on outstanding orders for Driggs ammunition have been made, but the progress toward completion of these orders has been slow owing to delay in receipt of shell. The necessary cartridge cases and fuses could be made ready in a few weeks.

The capacity of the plant for the production of cartridge cases is substantially as heretofore reported.

The inspection of 1-pounder cartridge cases has been materially facilitated by the shipment of a 1-pounder gun to the company's works.

Previous to the receipt of this gun proof rounds of 1-pounder cases were shipped to Philadelphia for test.

Deliveries of 6-pounder armor-piercing shell from the American Projectile Company being regularly established, the loading, fusing, and assembling into loaded rounds has been made possible, and deliveries will be made from time to time, as the quantities on hand become sufficiently large to justify the dispatch of a tug from the New York Navy-Yard.

A small order for armor-piercing shell was filled for the Hotchkiss Ordnance Company for delivery at the Mare Island Navy-Yard.

The development of the 6-millimeter cartridge case has continued, and the company are now ready to furnish the standard navy small-arm ammunition in quantity. This ammunition has been tested extensively at the company's range, and, to a limited extent, in machine guns owned by other parties. Troisdorf powder has been used with uniformly good results as to pressures and velocities.

D. *Hotchkiss Ordnance Company, Providence, R. I.*—The principal work during the year has been on hydraulic recoil top carriages for rapid-fire guns. A few cage stands and deck circles have also been furnished.

The tools and gauges for 6-pounder mounts were finished early in the year and the ten top carriages ordered were manufactured and delivered.

All mounts made at the company's works were given a detail inspection and were shipped to Hartford for proof fire, which all passed successfully.

A number of field carriages and limbers have been delivered to the Naval Militia of the several States. There being no standard navy design for these, they have been given only a general inspection to insure interchangeability of small parts and proper fitting and smooth working of all pins, hinges, and movable parts.

The axle clamp brake used on the field carriage is quickly applied and is very efficient.

E. *Pratt & Whitney Company, Hartford, Conn.*—The principal work during the year has been on 1-pounder and 6-pounder Hotchkiss rapid-fire guns, all orders for the latter having been completed and nine extra guns finished for stock. Work is nearly finished on twenty-seven 1-pounders for the Navy and twenty-five for stock. Two of the twenty-seven, as well as two other 1-pounder guns delivered during the year,

are intended to replace four Mark I guns loaned by the Department to the Hotchkiss Ordnance Company.

Twenty-four small-arm barrels have been manufactured and delivered on orders from the Bureau, and a number have also been sold to inventors and other private parties.

Experimental work was done on two chrome-steel forgings for small-arm barrels, but the operations of rough turning and drilling developed such excessive hardness in the metal as to render it unsuitable for the purpose.

This company has made a star gauge, with outfit of rings, points, and accessories, on a foreign order. A report on the gauge was forwarded at the time.

The approximate yearly capacity of the plant is at present as follows:

6-pounder R. F. guns	150
1-pounder R. F. guns	300

The output could be doubled in ninety days by the installment of another rifling machine.

Additions have been made in the way of tools and machinery for limb work on rapid-fire guns, and improvements in methods have rendered the capacity for this work more than double that for the output of guns.

F. *Colt's Patent Firearms Manufacturing Company, Hartford, Conn.*—An order for 2,000 improved navy double-action revolvers was placed with this company early in the present calendar year, and several orders for the Naval Militia have been received from time to time. Deliveries will be completed before the end of the present month.

The presence of several decided faults in the double-action revolver previously in service in the Navy led to the consideration of an improved weapon, the Army having already adopted one which was free from some of the faults of the Navy model.

In a report from this office the faults of the navy revolver were set forth at length, but may be summed up as follows:

1. On the rebound of the hammer, after firing, the cylinder was free to revolve, making a missfire or the passing over of one or more chambers possible.

2. When cocked, and during the descent of the hammer, the hand, which alone held the cylinder, being freed by the release of the trigger, no longer preformed its function, thus leaving the cylinder free to revolve.

3. The design permitted of the trigger being pulled before the cylinder was home, after reloading.

4. The latch was of faulty design.

5. The springs on hand and aligning bolt were weak.

Some of these disadvantages were overcome in the new Army model, but a still further improvement was made by so arranging the parts that the revolution of the cylinder must precede the cocking and consequent release of the trigger.

As a result of these improvements and a rigid detail and finished inspection, an excellent weapon has been produced.

The appearance of the revolver has been much improved by the substitution of rubber-stock scales for the wooden ones previously in use. It is also believed that the rubber scales will stand the wear of service much better.

An estimate for converting the old model revolvers now in service was submitted by the company, but no action has as yet been taken on it.

I. W. Frazier, New York, N. Y.—Mr. Frazier, as agent for the sale Lee magazine rifle, has furnished a few rifles and equipments for e of the Naval Militia.

supply of the Navy model is entirely exhausted and the guns red during the year have been of an older type. It is not proba- it any more of these could be obtained, as, in view of the adop- a new arm by the Navy, none have been manufactured for some

I. B. Chapman & Co., Springfield, Mass.—The manufacture of r tanks for all calibers of naval breech loading guns has been stablished and deliveries have been continuous since January.

he new tanks watertightness of the cover is secured by an ordi- ine-bearing, valve joint, in place of the surface-bearing with rub- sket employed in the old tanks.

new design will, it is believed, not only insure water-tightness, ll render the removal of the cover easy, and thus obviate the ing delay in getting out a powder charge which has been so gen- experienced on board ship.

tanks are of an average weight, somewhat below that of tanks vious designs, and certain changes are contemplated in the 12-inch 3-inch tanks which will result in a still further saving of weight l permit of the use of heavier copper for the bodies, maintaining eight at the standard now fixed.

Henry A. Brown, Springfield, Mass.—A small number of revolver rs and cartridge boxes have been furnished for the Navy and the Militia.

RAPID-FIRE GUNS.

or alterations have been introduced into the last lot of twenty-five der Mark II guns ordered. The crank clearance and the verti- ts in the block have been extended so as to be unmasked when eech is open, and the lower ends of the slots are now beveled so eave no lodgment for sand or dust.

telescoping rear sight has been improved, the spring in the sec- y bar having been extended upward so that the bar may be raised sping it between the thumb and forefinger, the thumb pressing ecked end of the spring and thus unlocking the bar.

he sights previously made the secondary bar was held in its nor- sition by friction only; it is now locked both up and down, being revented from being jarred from the desired position by the rge of the gun.

breechblock of one gun has been browned as an experiment. It eved that it will facilitate the care and preservation of the block ice.

eems probable that the weight of the hammer in the 1-pounder pounder guns could be materially reduced and the mainsprings de weaker without incurring chances of missfire. The R. F. G. s have frequently been fired in shoulder rifles with the pin and used ordinarily in those guns.

le the extractor now in use has proved eminently satisfactory, it able that one of an improved form will be submitted for use in guns.

MACHINE GUNS.

e machine guns have been in course of development in this dis- uring the year—the Colt's automatic, the Gatling, and the Pratt itney.

The Colt gun is a single-barreled automatic gun, in which the pressure of the powder gas, escaping through a small aperture in the bore near the muzzle, actuates the mechanism through a simple system of levers, and thus performs all the operations of firing, extraction, ejection, and loading.

A .30-caliber and a 6-millimeter gun have been constructed, and the former has been tested by an army board at Springfield. The latter has, as yet, been given only private tests by the company, but it is their intention to submit it for trial by the Navy board at an early date.

As at present constructed it requires rimmed ammunition, but there is no apparent obstacle in the way of fitting it for the rimless case, which is to be used in the navy small arm.

A Gatling gun of 6 millimeter caliber is under construction at the Colt's Patent Firearms Manufacturing Company's works, and should be ready for test some time in August.

This gun is similar to the gun of .30 caliber tested by the Machine Gun Board last year, only such changes having been introduced as are made necessary by the reduction of caliber.

Tin feed strips are used, but it is proposed to modify the feed mechanism in such a way that the cartridges can be taken directly from the packing boxes if desired.

The work of fitting a motor to the Gatling gun has been continued during the year and is now completed.

The motor and casing complete as now fitted weighs 105 pounds; it is attached to the gun by an interrupted screw and is securely locked in position.

The total length of the motor casing is $21\frac{3}{8}$ inches, but as it overlaps the breech by $1\frac{3}{8}$ inches the resultant addition to the length of the piece is only 20 inches. With the motor unshipped the central shaft of the gun projects $2\frac{1}{16}$ inches beyond the face of the breech.

The system has been improved and made practicable by the introduction of a friction connection between the motor and the central shaft, which is automatically released in case a jam occurs in the gun. Provision has also been made to keep down the speed of the gun in case of a sudden access of current or removal of load by exhaustion of the feed.

It is the intention of the Gatling Gun Company to exhibit this motor in connection with the approaching machine-gun trials.

The Pratt & Whitney improved Gardner is a two-barreled, hand-operated gun, whose success with black powder cartridges led the company to adapt it to the use of modern ammunition. It is expected to be entered in the competitive Navy trials.

With the perfected ammunition which is now being obtained, the problem of producing an automatic gun of small caliber using smokeless powder has become much less difficult, and the successful solution of it will undoubtedly make the universal adoption of a gun of this type a certainty.

SMALL ARMS.

The experience of the year has not led to the discovery of any material for small-arm barrels superior to the $4\frac{1}{2}$ per cent nickel steel, and this has been used in all the barrels made for the Navy.

From experiments at the proving ground it would appear that the life of a barrel with the type of rifling hitherto used did not greatly exceed 3,000 rounds, the rifling becoming so much worn that the accu

racy was seriously affected. Rifling of the pure Metford form with a slightly decreased twist will shortly be tried, and is expected to give markedly better results.

It has been found practicable to lighten the barrel materially by reducing the thickness of the walls of the chamber and bore, and the barrels used in service will be still further lightened by being shortened to 28 inches, the reduction from 30 inches not having been found to cause a material falling off of velocity.

The accuracy and penetrative power given by the small-arm barrel and the navy ammunition have been gratifyingly demonstrated by a long series of firings conducted on the ranges of the Winchester Repeating Arms Company and the Union Metallic Cartridge Company. The excellent targets made have been from time to time forwarded to the Bureau.

The question of the best breech mechanism and magazine action for use in the Navy has been settled during the year by the adoption of the Lee straight-pull rifle, the invention of Mr. James P. Lee, who is also the inventor of the magazine rifle now in use.

The matter of sights, cleaning rods, and minor fittings still remain to be decided.

A fixed rear sight would have many advantages over the bar sight ordinarily used on a military arm, and, with the larger danger zone obtained with the flat trajectory of the 6-millimeter rifle, it may be possible to dispense altogether with the adjustable sight, except for sharpshooting.

The use of a steel cleaning rod has been found to wear away the lands of the rifling at the muzzle very rapidly, and thus to destroy the accuracy of the piece. Cleaning should be resorted to as seldom as possible, and a brass or wooden rod or a leather thong be used instead of a steel rod.

Owing to the fact that no efficient method of blacking aluminium has been discovered, the use of that metal for bands will probably not be feasible. Bands of steel considerably lighter than those usually employed may be fitted.

AMMUNITION.

The manufacture of ammunition for the minor caliber rapid-fire guns has been standardized, so that the several companies are now working to the dimensions and tolerances laid down in the book of specifications issued in January of this year.

A new time fuse for 4-inch, 5-inch, and 6-inch shrapnel has been devised and is being perfected by the American Projectile Company; the same company designed a gas check to strengthen the Hotchkiss and Driggs fuses of old design, which were found to be not strong enough to resist the pressure of gas evolved by the ignition of the bursting charge of 6-pounder armor-piercing shell.

With the change from right-hand to left-hand threads for base fuses certain modifications were introduced into the Hotchkiss and Driggs fuses which, it is believed, will increase their strength materially.

The mouth cup devised for use with the 6-inch cartridge case, in which the projectile is not assembled with the case, has proved satisfactory, the fired cases requiring only slight reforming at the mouth in order that a second mouth cup should be fitted.

Service reports of rapid deterioration and corrosion of fired cartridge cases of large caliber led to a thorough investigation of the causes therefor, and to the conclusion that all trouble of this nature would be

obviated by thoroughly cleaning the cases in hot water immediately after firing and by the exercise of reasonable care to keep them dry and clean when stored before reloading. A report on this subject has been previously forwarded from this office.

The small-arm ammunition now furnished to the Navy for experimental purposes is proving eminently satisfactory, the faults discovered being mainly due to the powder used and to lack of sufficient care in the manufacture and inspection. No difficulties have been met with which can not be overcome by increased vigilance in these respects.

No machine for loading the 6-millimeter cartridge by weight is known to this office, but the ammunition manufacturers are confident of their ability to load by measure to a tolerance of one-half grain.

When the new rifle adopted by the Navy Department is issued to service it is proposed to put up all ammunition at the factories in the clips, and to pack them in the boxes in which they are to be carried at the belt. It seems probable that a waterproof box of sheet metal or prepared paper or wood pulp may be devised which will combine strength and lightness and be entirely adequate for the purpose. By packing the clips in these boxes at the factory, storage room on board ship will be economized and one handling of the ammunition saved.

The probability that detachments of sailors and marines will be called upon, from time to time, for duty in suppressing riots, necessitates the consideration of the question of "riot ammunition." The great range and extreme danger zone of the 6-millimeter rifle, using the standard ammunition, would render its use in contracted spaces, such as the streets of a city, extremely dangerous to unoffending citizens a considerable distance from the vicinity of the mob.

To meet this contingency the range should be reduced and the velocity of the bullet be made to decrease more rapidly than is the case with the standard bullet. Three methods of accomplishing this are suggested:

(1) The use of an aluminium bullet of the same form and dimensions as the standard steel-jacketed bullet.
(2) The use of a reduced powder charge.
(3) The use of a "canister" cartridge, such as has sometimes been employed in the .45-caliber gun.

It seems probable that the first of these methods would give the best results, though it would, perhaps, involve the greatest expense.

The use of a 6-millimeter ammunition having been entirely experimental, no blank cartridges have as yet been furnished.

Owing to the excessive fouling of the bore that would probably result from the use of black powder in blanks, it would seem advisable to load them with smokeless powder. If black powder be used, the fouling might be somewhat reduced by putting in the base of the case a few grains of smokeless powder, which would burn or blow out much of the residue.

To insure proper working of the magazine mechanism it is recommended that the blank cartridge be made in the form of a complete ball cartridge, the end of the case being split and turned over to simulate the form of the bullet.

Respectfully submitted. N. C. TWINING,
Ensign, United States Navy, Inspector of Ordnance.

CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

NUAL REPORT OF THE INSPECTOR OF ORDNANCE IN CHARGE OF PROVING GROUND.

NAVAL PROVING GROUND,
Indian Head, Md., September 10, 1895.

IR: I have to submit the following report regarding this station and work in progress and completed during the past year:

PROGRESS OF STATION.

ince making my last report about 800 linear feet of brick retaining l has been completed, and in connection therewith a brick bomb- of has been erected in rear of the range battery. From this retain- wall the hill has been sloped and sodded where practicable, in order revent the further sliding of the earth.

'he sand in rear of the three target structures for light plates, to eastward of the range battery, has also been held in place by a ck retaining wall.

Vo. 3 firing butt, for velocity work, has been built for use in front of secondary battery.

Vo. 2 firing butt, the largest at the station, the top or roof of which been badly damaged several times by 12-inch and 13-inch project- s, has been repaired and put in good condition again, the 3-inch ought-iron plates of the top having been replaced by cast-iron plates, nches thick and of smaller dimensions. Since their introduction cost of repairs has been much decreased.

The shed at the machine shop for covering the boiler and protecting coal supply has been increased in dimensions, so that now all the terial for use in the machine shop and in the boilers is protected m the weather.

A watch box and an office have been installed on the wharf. They were l buildings which were of no further use at the navy-yard and were nsported to this station on the barge.

A complete wire fence now incloses all the Government reservation, fence on the southern boundary line having lately been finished.

The office has been thoroughly repaired and a brick addition added reto, increasing the office room and furnishing a library for the rage of the archives, drawings, and records.

The pile fou dations of cottage No. 1 having rotted out, endangering building, a brick cellar wall has been placed under it. Repairs e been also made to the foundation of cottage No. 3.

'he roads and railway tracks have been repaired where necessary.

During the year 35 acres of land were planted in oats, from which e been harvested about 800 bushels of good oats, with 18 tons of w. About 5 tons of hay have also been cured and stored. Forty acres were planted in corn from which it is expected to harvest ut 400 bushels of good corn, about 150 bushels of short corn, and ut 9 tons of corn fodder. From this showing I am of the opinion t the station will be entirely self-supporting in regard to fodder for care of the stock.

About 2,600 cords of pine wood have been cut by contract on the ervation, and the gun factory and the brick yard at this station have n supplied with good pine wood at a cost of about $1.61 per cord. e second growth of pine from which this wood has been cut is fast ing out and falling, and it is in the interest of economy to cut the

rest of it (about 2,000 cords) as soon as possible, in order to save it for cordwood, and also to give the young hard-wood trees (of which there are a large number) a better chance to grow. These pine trees will be of no use whatever in three or four years, and as they are now make very good cordwood.

Since the last report 325,000 brick have been burned successfully, the brick costing, approximately, $5.54 per thousand, delivered on barge at the wharf.

Gravel and sand have been hauled from the shore for the butts and target structures, where needed, to replace the earth and clay originally used, and the Washington Navy-Yard has also been furnished with sand and gravel, when wanted, by means of the barge.

A new brick filling house has been completed, with the exception of the corrugated iron roof, the material for which has not yet been received.

A brick magazine and a brick high-explosive magazine are both well under way and the railroad track has been extended to them.

All the ties for the railroad track, all the material for corduroying the bad places in the roads, as well as the heavy hard-wood timber for the last repairs to the large target structures, have been supplied from the timber on the reservation. There is still enough very large hard-wood timber standing to completely repair this large target structure at least twice more.

The telephone line has been constantly in use during the last year, and has generally given satisfaction, although it has been necessary to make frequent repairs in places on account of falling trees, etc. Two additional Turnbull telephones and a switch board have been installed, and the watch box on the wharf and the storehouse have been placed in telephonic communication with the office and the navy-yard. The line has been struck by lightning on two or three occasions, but the present lightning arresters, installed several months ago, have been sufficient to prevent any serious damage.

The chronograph lines running to the different firing points of the station have been repaired and put in order when necessary. Three Boulenge chronographs have been overhauled and repaired and one of them sent to the torpedo station.

The terra-cotta piping for the new sewer system has been inspected and accepted and the piping is now about to be delivered at the station.

An artesian well has been driven to a depth of 222 feet without encountering rock of any kind. It is hoped that a good supply of water will be reached within 400 feet.

STATION MACHINERY, FACILITIES, ETC.

The steam capstans which were installed last year on opposite sides of the valley have been of very great use, although difficulty was experienced at times during the extreme cold of the winter with the condensation of the steam in the underground pipes.

The traveling crane has worked fairly well. Since the installation of the manganese steel trucks furnished by the Taylor Iron and Steel Company no trouble has been encountered by their breaking while handling heavy weights. The turntables of the traveling crane track system are constantly out of order and almost useless. It is impossible to drain them properly and they require overhauling and cleaning out after every rain storm. The cast iron roller paths break frequently and have been replaced six times during the year. These turntables are entirely useless for the work they are intended to perform, and *should* be replaced at once by a more modern design.

The derrick on the wharf is still unsafe and will not lift even a 4-inch gun without some danger. A swinging crane or derrick should be erected on the northwest corner of the wharf, so that 4-inch, 5-inch or 6-inch guns could be brought down on the tug when necessary and when the barge was not available.

The launch *St. Barbara* has been running almost constantly during the year without any extensive repairs, but the Roberts boiler has finally given out and is now being repaired and overhauled.

The launch *Ordnance* is only in fair condition. The boiler tubes are very leaky and the engine almost worn out. This boat will still answer the purpose for carrying the mail and general work of the station, such as carrying out targets, sending officers to range stations, etc., but the boiler and engine should be repaired as soon as possible.

The whaleboat is in good condition.

A small double-sculled skiff has been built.

The machine shop, with its engine, shafting, lathes, planers, and shapers has worked satisfactorily and has been of great use in making slight repairs at different times. A circular-saw frame has been erected outside of the machine shop, so that backing logs and lighter timbers can be cut up when necessary. It is recommended that a small corn mill be added to this plant, so that corn can be ground for feeding the stock.

STATION NEEDS.

The quarters and buildings at the station are all lighted with oil lamps, and it is in the interests of economy and also safety to light the station by electricity, and I am of the opinion that the necessary plant could be installed with the force now at this station without calling in outside skilled labor.

Attention is again called to the necessity for erecting cheap dwellings for the leading men and boats' crews. It is impossible to keep skilled white labor at this station unless they have some place to live with their families, and there is no suitable place for such people within 10 or 15 miles. Five families of the leading employees now occupy one of the old wooden buildings known as the Long House. This building was built about thirty-three years ago, and is now in a tumble-down condition and not worth any repairs. I have to recommend that a number of small brick houses, not to cost more than $600 apiece, be built for housing these employees out of the brick manufactured at this station. At least six of them are necessary.

ARMOR TESTS.

The following armor plates have been tested:

A *Brooklyn's* curved Harveyized nickel-steel plate, No. 958½, 4 inches thick, representing Group No. 16, Carnegie Steel Company, for 8-inch B. L. R. barbette, was tested October 4, 1894. Two Carpenter 4-inch armor-piercing shell were used, with striking velocities of 1,491 and 1,595 foot-seconds. The point and upper part of the ogive of the first projectile separated from the bourrelet and penetrated plate and 12 inches of backing. The second shell smashed up, a small portion of the point welded into plate. Penetration, 1 inch. Before the test the face of this plate was badly cracked, both horizontally and vertically, presenting a checkerboard appearance, the deepest cracks from ⅜ inch to ⅝ inch. The first impact was placed at a point free from cracks and none of the old surface cracks were affected by the shock. The second

impact was in a group of horizontal-checkered cracks, with the result that the surface flaking about impact, usual in Harveyized plates, followed the lines of these cracks for a distance of about 4 inches from the center of impact. The cracks in other parts of the plate were not affected.

A ballistic test of *Oregon's* 17-inch curved Harveyized nickel-steel barbette plate B-145, Group No. 17, Carnegie Steel Company, was made December 15, 1894. Two Wheeler-Sterling 12-inch armor-piercing shell were used, with striking velocities of 1,410 and 1,858 foot-seconds. The first shell penetrated 16.6 inches and rebounded entire and uncracked. The plate was cracked through from impact horizontally to right edge of plate. The second shell smashed on plate head, welded into impact. Penetration, 9 inches. A through crack was opened from top of plate, passing through this impact to the former horizontal crack, and a through crack was developed from top to bottom of plate, passing through impact No. 1. As the plate was through cracked from impact to edge the first round, the rejection of the plate was recommended. A Carpenter 12-inch armor-piercing projectile fired December 18 against the left-hand fragment of plate, with 1,858 foot-seconds striking velocity, broke up, the point welded into impact, with penetration of 9.5 inches. This fragment was broken across into two pieces and a small wedge-shaped piece broken out.

An *Oregon's* Harveyized nickel-steel side armor plate, B-291, 18-inches thick, representing the first half of the *Oregon's* 18-inch side armor, Group No. 18, Carnegie Steel Company, was tested for acceptance March 11, 1895. Two Carpenter 12-inch armor-piercing projectiles were used, with striking velocities of 1,465, and 1,926 foot-seconds. Both shell broke up, with ogives welded into plate. Second projectile cracked the plate through from top to bottom through impact, the crack opening out about 2 inches wide. This plate passed the acceptance test.

A *Massachusetts'* Harveyized nickel-steel side armor plate, No. 5983 B. I., 18 inches thick, representing Group No. 20, Bethlehem Iron Company, was tested for acceptance April 20, 1895. Two Holtzer 12-inch armor-piercing projectiles were used, with striking velocities of 1,465 and 1,926 foot-seconds. Both shell broke up, point and ogive welded into plate. Penetration, 11 and 15 inches. Second projectile cracked the plate through from top to bottom through impact. Plate passed the acceptance test.

An *Oregon's* Harveyized nickel-steel side armor plate, B-309, 18 inches thick, representing the second half of the *Oregon's* 18-inch side armor, Group No. 19, Carnegie Steel Company, was tested for acceptance May 1, 1895. Two Holtzer 12-inch armor-piercing projectiles were used, with striking velocities of 1,465 and 1,926 foot-seconds. Both shell smashed up on plate, a small portion of point and ogive from the first projectile and the point and ogive of the second remaining welded into impact. Probable penetration, 8 and 10 inches. Second projectile cracked the plate through from top to bottom, the crack running through right edge of this impact; also, two small cracks ran from upper and lower edges of this impact to the larger crack. This plate passed the acceptance test. A Carpenter 13-inch armor-piercing projectile was fired against this plate, with striking velocity of 1,810 foot-seconds (the second acceptance velocity for 13-inch B. L. R. against Harvey plate of this thickness). Shell broke up into great many pieces, the head swollen to diameter of 16 inches. Penetration, 8.7 inches. Plate cracked diagonally from top to bottom through impact, with a second crack from impact to top of plate. This plate was after-

ards demolished by a 13-inch Wheeler-Sterling A. P. sheel and a Wheeler-Sterling common steel shell.

A curved Harveyized nickel-steel plate, B-298, 5.5 inches thick, representing Group No. 20, Carnegie Steel Company, for the 8-inch B. L. R. turrets of the *Oregon* and *Brooklyn*, was tested June 15, 1895. This plate was rolled down to 5.5 inches from a piece of an *Oregon's* 17-inch barbette plate rejected for bad surface. Two Wheeler-Sterling special inch A. P. shell were used, with striking velocities of 1,774 and 2,000 foot-seconds. The first projectile broke up, the head remaining welded into impact. Penetration, about 3 inches. The second projectile remained in shot hole, its base plug 3.4 inches outside of plate, and was entire and unchanged in diameter. Penetration, about 9 inches. Plate was not cracked, and passed the test.

A ballistic test of the *Iowa's* 14-inch Harveyized nickel-steel side armor plate, B-230, Group No. 21, Carnegie Steel Company, together with the experimental target structure representing the framing behind the belt armor of the *Iowa*, was made September 4, 1895. This plate was intended for the *Oregon's* side armor, but was condemned on account of surface cracks; it was then reforged to 15 inches and then to 14 inches (after carbonization), and assigned to *Iowa's* side armor. Two Carpenter 10-inch armor-piercing projectiles were used, with striking velocities of 1,482 and 1,856 foot-seconds. Both shells smashed on plate, the head and point welded into impact. Penetration, 3.75 and 11 inches. The plate was not cracked, and passed the acceptance test. A Wheeler-Sterling 12-inch armor-piercing projectile was next fired against this plate, with striking velocity of 1,800 foot-seconds. The shell broke up, its head remaining in shot hole, badly cracked, the point and about 8 inches of ogive detached and carrying back bulge into backing. Penetration through, 17 inches. The plate was through cracked from top to bottom through impact. Also the plate was cracked, but not through, from this impact to and a short distance beyond impact No. 1. Plate dished 1.75 inches. The effect on the target structure was as follows:

By the first shot the structure was practically uninjured. Water leaked by many of the armor bolts and all of the 1.25-inch tap bolts binding the 2-inch armor deck to the plate were sheared. By the second shot the structure was also practically uninjured. All the water connections to armor bolts were broken and the packing and rings on armor bolts were shaken loose, partly due to crushing of backing. An examination after firing the 12-inch shell showed as follows: The structure had not moved at all. The plating behind the armor had bulged in about 2 inches, and the transverse and horizontal plating in wake of impact was somewhat buckled and bulged. The structure as a whole very slightly moved away from the plate.

The following tests of experimental plates have been made since last report:

Fourteen-inch plate, B-209, from Carnegie Steel Company. Plate tested February 21, 1895. This plate was originally intended for *Oregon's* 13-inch barbette, and was 17 inches thick and Harveyized. It was afterwards forged down to 14 inches after carbonization, and then water-tempered and furnished to the Government for experimental use. Two Carpenter 10-inch A. P. projectiles were fired with striking velocities of 1,859 and 1,930 foot-seconds, respectively. Impacts normal. Both shells smashed on plate; penetration in first round, 9 inches, with 1 inch of point of shell welded into impact, and in the second round penetration was 9.5 inches, the ogival of shell welded into shot hole.

No cracks. The same day a Wheeler-Sterling 12-inch A. P. projectile, fired with striking velocity of 1,858 foot-seconds, penetrated plate, backing, oak strut, and 12 feet of sand, and was recovered with but 1 inch of its point gone, and its ogival badly flaked. March 15 a Carpenter 12-inch A. P. projectile was fired under as nearly as possible the same conditions as the Wheeler-Sterling shell, the impact directly below that of the latter. This shell broke up, its point barely getting through plate and backing. The plate was cracked from top to bottom through the two 12-inch impacts.

Angular impacts, against same plate:

Plate backed as in previous rounds was blocked and secured against target structure so that line of fire made an angle of 15° with the normal at the point of impact proposed. A Wheeler-Sterling 12-inch A. P. shell, fired with striking velocity of 2,037 foot-seconds, struck plate at an angle of 15° and penetrated plate and backing without deflection. The shot hole was clean, regular, and cylindrical; its axis inclined 15° to the normal. The shell broke up into a large number of pieces, nearly all of them lodging in plate and backing. One crack developed from this impact to impact No. 3. Plate was then blocked and secured to target structure so that line of fire made an angle of 20° with the normal at proposed point of impact. A Wheeler-Sterling 12-inch A. P. projectile, fired with a striking velocity of 2,000 foot-seconds, struck plate at an angle of 20°, penetrated plate and backing, and broke up into small pieces, completely wrecking the backing in rear of impact; most of the pieces recovered in sand. Shot hole quite clean and smooth, making an angle of about 20° with surface of plate.

Experimental tests of 3-pounder trial shield plates of different manufactures and material, $\frac{1}{4}$-inch, $\frac{5}{16}$-inch, $\frac{1}{2}$-inch, and $\frac{5}{8}$-inch thick have been made from time to time with varying results. An experimental test of a 3-inch plate selected from a lot of rejected plates intended for the *New York*, and re-treated by the G. H. Blake Company, was made February 4, in connection with the test of three Blake 6-pounder A. P. shell. The plate was probably somewhat toughened by the re-treatment.

An experimental test of a chrome steel faced plate, 9 inches thick, manufactured under the Chase-Gantt patent, by the Midvale Steel Company, was made March 11, 1895. The body of the plate was cast steel, with chrome steel face. A Carpenter 6-inch armor-piercing projectile was used with a striking velocity of 2,104 foot seconds. The shell penetrated about 5 inches and broke up, the head of shell remaining welded into impact. The plate was cracked into three large pieces, the lower right fragment, shearing its armor bolt, fell to the ground.

A test of an experimental unbacked 6-inch Harveyized nickel-steel plate, B-213, from Carnegie Steel Company, was made April 27, 1895. The plate had been forged down to 6 inches thickness after carbonization. A Wheeler-Sterling and a Carpenter 6-inch A. P. shell were used with a striking velocity of 2,100 foot-seconds. The former just penetrated plate and broke up, the point badly fused and upset, together with all but one piece of the body of shell, being recovered in rear of the plate. A through crack was developed from impact to bottom of plate at a short distance to left of impact. The Carpenter shell broke up, head welded into impact, penetration almost through back bulge. Plate through cracked from this to first impact.

Two similar 10-inch experimental Harveyized nickel-steel plates, marked B-329, from the Carnegie Steel Company, were tested May 25, 1895. These plates were backed with 1 foot of oak, and two $\frac{5}{8}$-inch mild-

eel plates. A Holtzer 8-inch A. P. shell, with striking velocity of 900 foot-seconds, broke up against first plate, the head remaining elded and fused into impact. Probable penetration, 6.5 inches. No acks. A Wheeler-Sterling 8-inch A. P. shell, fired with striking veloc-y of 2,080 foot-seconds, broke up into small pieces, head remaining elded into impact, and upset to 9.5 inches diameter. Probable pene-ation, 7.25 inches. A through crack was developed to left edge of ate, where it was ⅜-inch wide. A Carpenter 8-inch A. P. projectile as fired against the second plate with a striking velocity of 2,064 foot-conds. The shell broke up, head welded into impact. Penetration, 25 inches. A through crack was developed from impact to bottom of late. This plate was from top end of ingot.

A test of an experimental chrome-steel plate, B-387, 10.5 inches thick, om the Carnegie Steel Company, was made August 14 and 15, 1895. his plate was backed with 1 foot of oak and two ⅝-inch mild-steel lates. Three Carpenter 8-inch A. P. projectiles were used with strik-ıg velocities of 1,786, 1,687, and 1,435 foot-seconds. The first two pro-ectiles penetrated plate and backing, cracking the plate. The third rojectile penetrated plate till point got just through back bulge, when t rebounded to the front, entire but cracked. The plate was still fur-her cracked, and right upper corner was detached, but was held by an ırmor bolt to backing.

The test of the experimental, unbacked, 7-inch, gashed, face-hard-ened plate, B-91½, from the Carnegie Steel Company, was made August 14 and 15, 1895. The upper and lower corners of this plate were left smooth, not gashed. Two Carpenter 6-inch A. P. shell were fired at the gashed surface with striking velocities of 1,816 and 2,100 foot-seconds. The first penetrated 6.75 inches and remained wedged into shot hole, base projecting. The ogive and point of the second projec-tile passed through plate and back bulge, while the body of the shell projected from the impact, its base 7 inches out from place of plate. Two Carpenter 6-inch A. P. shell were fired at smooth surface with striking velocity of 2,100 foot-seconds. The first of these remained welded into impact, its base projecting 5 inches. Calculated penetra-tion, 6.5 inches. The effect on plate in the last round was almost dentical with that of the previous round. Estimated penetration, 6.5 nches.

The following plates, whose ballistic tests appeared in last report, ave since been destroyed in experimental tests or in tests of projectiles:

The second *Indiana's* 18-inch Harveyized nickel-steel side-armor plate, 949 B. I., was destroyed in the test of a Wheeler-Sterling 12-inch A. . shell, striking velocity 1,926 foot-seconds, two experimental Johnson 0-inch cast-steel shot, striking velocity 1,983 foot-seconds, and two 2-inch common shell fired in test of powder.

The *Oregon's* 17-inch curved Harveyized nickel-steel barbette plate, 107, was destroyed in the test of two experimental Holtzer 10-inch . P. shell and an experimental Johnson 10-inch cast-steel shot, all fired ith striking velocity of 1983 foot-seconds, and in the test of Carpenter 8-inch A. P. shell, lot No. 6.

The *Massachusetts's* 17-inch curved Harveyized nickel-steel barbette late, 5523 B. I., was destroyed in the test of three Carpenter special 0-inch forged steel A. P. shell and a Carpenter special 10-inch solid orged steel A. P. shot, all fired with a striking velocity of 1,983 foot-seconds.

The 6-inch curved Harveyized nickel-steel plate A–883, rejected on ccount of surface cracks and presented to the Government for experi-

mental purposes, has been used unbacked for the test of six Wheeler-Sterling special A. P. shell with and without soft caps, with striking velocities from 1,700 to 2,100 foot-seconds.

The *Terror's* 7-inch nickel-steel side-armor plate A-489 was destroyed in competitive test of 13-inch steel shell.

The top half of *Terror's* 7-inch nickel-steel side-armor plate A-531 was destroyed in the competitive test of 13-inch common steel shell.

PROOF OF GUNS.

The following guns have been proved with service rounds, most of the proof rounds having been fired during tests of powder, projectiles, and in experimental work:

Four-inch R. F. guns Nos. 67, 68, 69, 70, and 71. Driggs Nos. 4 and 5. Also, Nos. 68, 69, 70, and 71 for Hotchkiss Ordnance Company, not marked.
Five-inch R. F. guns Nos. 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, and 70.
Six-inch R. F. gun No. 135, Fletcher mechanism.
Six-inch R. F. gun No. 136, Dashiell mechanism.
Eight-inch B. L. rifles Nos. 51, 22, 23, 24, 25, 26, 27, 28, and 29.
Ten-inch B. L. rifles Nos. 21, 22, 23, 24, and 25.
Twelve-inch B. L. rifles Nos. 5, 6, and 7.
Thirteen-inch B. L. rifles Nos. 1, 3, 4, and 5.
Four-inch R. F. gun No. 74, made of defective forgings, has been fired 170 times and is still retained as a station gun.

While testing an experimental 6-inch A. P. shell, fired with a velocity of 1,900 foot-seconds, the 6-inch wire-wound gun broke in two just in front of the front hoop. The tube showed a comparatively clean fracture. The metal was apparently of very poor quality, the fracture looking almost like that of cast iron. The wire did not unwind very much, and several pieces near the break were soft and easily bent between the fingers, the temper having entirely disappeared, probably due to the extreme heat of escaping gas. The remainder of the wire retained its temper. This round was the forty-fifth from the gun, the highest recorded pressure ever observed in the gun being 14.3 tons.

In the test of an experimental 6-inch Wheeler-Sterling A. P. projectile fitted with a conical soft wrought-iron cap, the upper part of the bore of 6-inch B. L. R. No. 132, at a point 8.5 feet from the muzzle, was permanently enlarged, cut, and bruised, and considerable straining of the gun was shown by the movement of D hoop about one thirty-second of an inch. It is probable that the soft cap was dislodged by the shock of discharge and wedged in between ogival of shell and side of bore, causing expansion of the latter.

BREECH MECHANISMS.

The breech mechanism for rapid-fire guns has continued to work well. The breech mechanism for 12-inch and 13-inch guns has also worked well. With the closed-in worm shaft in 13-inch B. L. R. No. 5 difficulty was experienced in opening breechblock, due to galling of shaft, caused by slight displacement of A hoop after a very high pressure. Split front gas check disks, fitted to 8-inch and 13-inch B. L. rifles, have given excellent results under all pressures. A test of the Fletcher and Dashiell breech mechanisms in the 6-inch rapid-fire guns was made to determine their relative fitness for service, and it was recommended that the Fletcher system of breech closure be adopted for the 6-inch rifle guns. A competitive trial of the breech mechanisms of the Hotchkiss, Driggs, and Fletcher field guns was made at this station by a board of officers appointed by the Department.

The Hurst 50-caliber rapid twist reenforced cartridge for 8-inch B. L. fle has been tested with the following results:

The breech closure for this gun differs from the standard naval patrn for 10-inch caliber only in the form and dimensions of the breech ug. The gun was strapped to a 10-inch saddle and fired from a 10-ch hydraulic mount. Ten rounds were fired in the test of this gun ith the following results:

Round 1.

Outer charge, 160 pounds "S. M. A. 40" (6-inch brown powder), oured in loosely in the annular space of the outer cylinder; inner iarge, 8 pounds "U. F. 31," index No. 207 (10-inch brown powder), ade up as a 4-inch charge; Hurst 8-inch cast iron projectiles, weigh-ig 250 pounds; muzzle velocity obtained, 1,618 foot-seconds; mean ressure in inner tube, 6.8 tons; mean pressure in outer case, 5.7 tons. The tail of projectile broke off.

Round 2.

Outer charge, 142 pounds "S. M. A. 40;" inner charge, 10 pounds U.F. 31;" Hurst 8-inch cast-iron projectile; muzzle velocity, 2,196 foot-econds; pressure in inner tube, 9.9 tons; pressure in outer case, 9.4 ons.

Tail of projectile evidently broke off in gun, a gouge being made 1.25 ches long by 0.25 inch deep in smooth part of bore.

Round 3.

Outer charge, 172.25 pounds "S. M. A. 40," built up into an annular harge with some loose grains; inner charge, 12 pounds "U. F. 31;" lurst 8-inch cast-iron projectile; muzzle velocity, 2,452 foot-seconds; ressure in inner tube, 15.8 tons; pressure in outer case, 12.9 tons.

Tail of projectile broke off in gun, injuring grooves of rifling slightly, nd the velocity was probably increased by diminished weight of pro-ectile.

Round 4.

A service 10-inch plug, with mushroom disks and gas check, was then ut in gun in place of the Hurst breech mechanism and the gun fired ith single charges and service shell. A common cast-iron shell was aded clear into the origin of the rifling.

Charge, 150 pounds "U. F. 29," index No. 168 (10-inch powder); uzzle velocity, 1.984 foot-seconds; pressure, 8.8 tons.

Round 5.

Charge, 200 pounds "U. F. 29;" projectile, cast-iron common shell aded into origin of rifling; muzzle velocity, 2,357 foot-seconds; pres-ure, 13.5 tons.

Round 6.

Charge, 200 pounds "U. F. 29;" projectile, cast-iron common shell, aded so that band stuck at rear end of cylinder in the same position ccupied by the band of the Hurst projectile, thus decreasing the ubical contents of the chamber by about 210 cubic inches below that n the last two rounds; muzzle velocity, 2,563 foot-seconds; pressure, 7.2 tons.

Round 7.

The Hurst mechanism was replaced in the gun and forged projectiles were used with Hurst loading.

Outer charge, 179.5 pounds "S. M. A. 40," loaded as in previous rounds; inner charge, 10 pounds "U. F. 31;" Hurst 8-inch forged steel A. P. projectile; muzzle velocity, 2,378 foot-seconds; pressure in inner tube, 15.7 tons; pressure in outer case, 12 tons.

Head of projectile went into butt; tail struck top of butt, and was lost in woods. The fracture of the tail presented a very peculiar appearance, being drawn out and reduced in diameter at extreme end exactly like a magnified test specimen that had been pulled.

Round 8.

Outer charge, 172 pounds, "S. M. A. 40;" inner charge, 9 pounds "U. F. 31;" projectile, Hurst 8-inch forged steel A. P. shell; muzzle velocity, 2,290 foot-seconds; pressure in inner tube, 17.4 tons; pressure in outer case, 11.5 tons.

The tail of projectile was pulled off as in previous round. In all probability the outer charge was ignited before the tail left the inner tube, causing the pressure to grip the mouth of the inner tube and the tail of the projectile holding on to the latter. The inner tube could not have stood a pressure of 17 tons on the inside without having some pressure on the outside to help it.

Round 9.

Outer charge, 5 pounds "S. M. A. 44," broken grains in bottom of cylinder; 161 pounds same powder in cylinder proper, and 9.5 pounds in a cone on top of cylinder, making total outer charge 175.5 pounds; inner charge, 10 pounds "U. F. 31;" the tube had four perforated plugs, situated 4.75 inches from its mouth, these plugs being so arranged as to allow gas to escape when a pressure of 2,000 pounds was reached; projectile, Hurst type, with A. P. head and tool steel tail, plain rotating band 1.25 inches wide; muzzle velocity, 2,088 foot-seconds; mean pressure in inner tube, 10 tons; mean pressure in outer case, 11.5 tons.

The projectile passed through vertical pine boards at entrance of butt, making a vertical keyhole about 8 by 12 inches, and evidently broke up immediately on striking the sand. The tail was broken off close to the head, and at a point 12 inches from its rear end.

Round 10.

Outer charge, 177.5 pounds "S. M. A. 44," put up in same manner as in previous round; inner charge, 10 pounds "U. F. 31;" projectile, same make as before, rotating band 1⅜ inches, containing three grooves; muzzle velocity, 2,096 foot-seconds; pressure in inner tube, 12.3 tons; pressure in outer case, 11.8 tons.

A keyhole was made in pine planks as before, but inclined 45° from the vertical. The tail was broken short off from the head and was fractured at points 3 inches and 12 inches from its rear end.

PRIMERS.

Percussion primers have been regularly used only for the Hotchkiss and Driggs R. F. guns, but they have occasionally been used in the large calibers when electric attachments failed or were not available, or when testing percussion firing attachments. They have continued to give satisfaction.

Experiments have been made to determine whether there is any danger of exploding fixed ammunition in loading by forcing the shell home when there is too much powder in the case. A number of 3-pounder cases primed with new percussion primers were filled with gravel about the size of the cubical powder grains used in the 3-pounder and 6-pounder cases, and other cases were filled with hard, gritty, finer gravel next to the primer, in order that the conditions would be favorable to press directly on it. A shell was entered into each case, which was then placed into the loading machine, some with and some without the block to uncover the primer seat and primer. On forcing the shell home, the gravel was very much crushed, some of it to sand, and in no case did primer explode, though the pressure was so great as to swell the cases to 0.50 inch greater diameter. Other experiments showed that the primer would be pushed out from the case before sufficient pressure could be brought to explode it, provided there was a hole in the center of the wooden head block of the machine through which the primer could pass.

Electric primers have regularly been used in all calibers above and including the 4-inch R. F. G. For use with the fixed ammunition, an electric primer was designed by the Bureau of Ordnance, was perfected by the Winchester Repeating Arms Company after experimenting at the proving ground, and was finally adopted for service use. These primers have been furnished for test with the 5-inch and 6-inch cases, and with one or two exceptions have all passed satisfactorily, exploding on first contact and checking gas perfectly. In a very few instances there have been leaks about the central contact posts sufficient to foul the firing pin. In their early manufacture in a few instances the retaining wads fell out, releasing the powder and resulting in the present practice of crimping the primers. For the breech-loading rifles the single wire electric primer has been in use. They have not given entire satisfaction, the single leading wire in many cases blowing out, the escaping gas fouling the lock.

ELECTRIC FIRING ATTACHMENTS.

Electric firing attachments and circuits have been furnished for the 4-inch, 5-inch, and 6-inch R. F. guns, and electric circuit and attachment plugs of similar design for the B. L. rifles. Except in some few instances, they have proved to be durable and efficient.

CARTRIDGE CASES.

Five-inch cases, representing lots Nos. 49 and 50, furnished by the Winchester Repeating Arms Company, have been tested with six rounds each, with service pressures, completing the test of all lots of cases of this caliber ordered.

Six-inch cases, representing lots from No. 1 to No. 4 and No. 11 to No. 30, furnished by the Winchester Repeating Arms Company, have been tested, with six rounds each, with maximum service velocities, and accepted. Lots No. 5 to No. 10, inclusive, were accepted without test, there being no gun available at the time. With these cases were furnished drawn brass mouth cups, having a bead of approved form around the outer surface of its rim, made to fit into the mouth of the cases, concave side in, the bead of slightly greater diameter than the cup, taking against the case all around its inner circumference. Experimental tests of the method of sealing the mouths of these 6-inch rapid-fire cases have been made, and it has been demonstrated that these mouth cups, when forced into the case and sealed with wax or shell-lac, seal and secure the case sufficiently for service use.

An experimental test was made of cartridge cases for 3-inch field gun with beveled, flaring, and thinned-down mouths (furnished by the Winchester Repeating Arms Company).

GUN MOUNTS.

The following gun mounts for different calibers have been tested during the year:

Six-pounder, No. 130.
Four-inch R. F. C. P. mounts, Nos. 67, 69, and 70, Mark III.
Five-inch R. F. C. P. mounts, Nos. 38, 58, 63, 66, 67, 69 (70, Mark V).
Six-inch R. F. C. P. mounts, Nos. 123 and 124, Mark V.
Six-inch *Dolphin's* gravity return, No. 1.
Eight-inch experimental spring return turret mount (left), No. 1.
Eight-inch *Indiana's* turret mount (right), No. 28, No. 23 (left), No. 25 (right), No. 29 (left), No. 37 (left), No. 33 (right), No. 29 (right), No. 28 (left).
Eight-inch gravity return converted pneumatic carriage for California Powder Company, Santa Cruz, Cal.
Ten-inch *Amphitrite's*, No. 13, Mark II, hydraulic turret mount (left).
Twelve-inch *Texas's* No. 8, Mark II, hydraulic barbette mount (right).
Twelve-inch *Puritan's* No. 4, Mark II, hydraulic turret mount (left).
Thirteen-inch *Indiana's* Mark II, hydraulic turret mount (right).

These mounts stood the proof firing very well. Some difficulty has been experienced with the elevating gear on 6-inch R. F. mounts, Mark V, and 8-inch turret mount, Mark VII. This has been corrected with the *Indiana's* 8-inch turret mounts, the elevation increasing 1° 50′ upon firing and no bending or twisting of cross shaft being observed. An attempt was made to correct this in the case of the *Indiana's* 8-inch turret mount No. 29 (right), a solid steel wheel being substituted for friction disks and the cross shaft being increased in diameter. This worked very well. Some difficulty was experienced with ball valves in box of recoil cylinder on the *Indiana's* 13-inch hydraulic turret mount (right). New valves were fitted, of a different design, with feather guides and conical seats, which worked properly. The *Puritan's* 12-inch hydraulic turret mount was fitted with a rotary rammer, which worked perfectly. This rammer is intended to be operated by an electric motor. Five-inch R. F. C. P. mount No. 70, Mark V, is of the new type, the gun recoiling in a sleeve on its cylindrical portion, instead of an oscillating bed. This mount has already been fired twenty-nine rounds, and has proved itself superior to the older design.

FUSES.

Lot 2 of time fuses made by the American Projectile Company was tested, and failed to work properly. Several time fuses of the same general design, made by the same company, were tested by firing down the range and into the butt. No definite results have been reached, the fuse not being regular in its action. Several service base percussion fuses have been tested, to determine the sensitiveness of primer and for other purposes. A number of Smith experimental hydraulic base time fuses have been tested, with varying results.

EXPLOSION CHAMBER.

A number of shrapnel furnished by the American Projectile Company have been burst in the explosion chamber during test for acceptance. Some experimental armor-piercing shell, carrying bursting charges, were exploded in chamber.

Test of relative explosive effects of common shell filled with shell powder, smokeless powder, wet gun cotton, and jovite.—These experiments were

carried on in frame compartments constructed for the purpose, and good results obtained, the ordinary shell powder doing as much damage as gun cotton and more damage than the smokeless powders. Jovite, an explosive of fine granular structure, resembling brick dust in color, gave a violent explosion, which was the most destructive, but nothing being known about its qualities as an explosive, it would seem that ordinary shell powder gave the best general results, everything considered.

A 13-inch steel common shell, which had been fired through a 7-inch nickel-steel plate in test for acceptance, was filled with 53 pounds of shell powder and exploded in a chamber made as follows: A 12-inch Harveyized nickel-steel plate on the target structure formed the base of a triangular compartment. Two 18-inch armor plates with backing, weighing about 35 tons each, formed the sides. Three 3-inch plates were laid on top, with their edges joining, to cover the whole compartment. The shell was placed on its side on a 1-inch steel plate in center of compartment. Upon explosion the shell broke up into sixty pieces, being thrown with great violence against the sides of the compartment. Dents in armor plates indicate this action. The 3-inch plates on top were lifted clear off the chamber and thrown over and away from the compartment, the 18-inch armor plate on left side of compartment was moved 8 feet on outer end and 5 feet on inner end away from original position, the armor plate on right side being moved 1 foot away. These armor plates were moved these distances, although shored from the outside.

Experimental test with loaded projectiles as a target.—Five 6-inch common shell, loaded and fused, were placed in a row on their bases, in front of an armor plate. Sides and roof to retain flying pieces were constructed of heavy oak logs and 1-inch plates, the chamber being open toward 6-inch gun. A 6-inch common shell loaded and fused was fired against these shells with service velocity, striking the middle one in center and exploding. The shell struck was shattered, but when recovered it was found that the fuse had not exploded, the shell being fractured on impact of shell from gun. No. 4 shell, which stood on right of shell struck, was thrown to right and front by the explosion of shell from gun, and striking point foremost, exploded. Shell No. 5, which was on the extreme right, was bruised, but otherwise uninjured. The fuse was jammed in nose of shell, holding the plunger in place and not allowing it to work. Shells Nos. 1 and 2, which stood on left of shell struck, were thrown violently to front, and 1-inch plate falling from above held them in the chamber, neither exploding. The chamber was wrecked.

SMALL-ARM RIFLE BARRELS.

The comparative test of five 6-millimeter small-arm rifle barrels, of the caliber intended for the Navy, reported on in last year's report, was continued and completed. Three of the barrels having been withdrawn, the material not being suitable, the test was narrowed down to the A barrel of Bethlehem nickel steel and M_1 barrel of Midvale steel, composition unknown. Ammunition loaded with 36 grains of rifleite powder (method of loading not noted) was used, the two barrels giving nearly the same results by continued firing for accuracy and velocity. If there was any difference it was in favor of the M_1 barrel.

Upon completion of 3,000 rounds it was found that, the rifling being nearly worn away, the accuracy was seriously impaired, great difficulty being experienced in hitting the target at 1,000 yards with either barrel. The A barrel gave a mean velocity of 2,305 foot-seconds and the

M_1 barrel 2,377.5 foot-seconds after 3,000 rounds, both barrels having given a mean velocity of 2,457.2 foot-seconds when new.

On April 17, 1895, a new barrel 30 inches long, lighter than the A and M^1 barrels, was received and tested, in connection with ammunition having lighter bullets, for accuracy, velocity, and height of trajectory at 500 and 1,000 yards.

These bullets weighed 112 grains, and 35 grains of rifleite was the charge. Other steel-jacketed bullets of 135 grains weight, and using 36 grains of rifleite were fired for comparison.

A mean velocity of 2,425.1 foot-seconds was obtained with the 135-36 grains of rifleite ammunition.

A mean velocity of 2,560 foot-seconds was obtained with the 112-35 grains of rifleite ammunition, steel-jacketed bullets.

A mean velocity of 2,572 foot-seconds was obtained with the 112-36 grains of rifleite ammunition, copper bullets.

A mean velocity of 2,577.7 foot-seconds was obtained with the 112 grain steel-jacketed bullet, using 36 grains of rifleite.

The trajectory for copper bullets (112-35) for 100 yards gives a maximum ordinate of 292 inches; the trajectory for steel-jacketed bullet (112—35) for 1,000 yards gives a maximum ordinate of 281 inches; the trajectory for steel jacketed bullets (11—236) gives a maximum ordinate of 264 inches.

At 500 yards the copper bullet has a maximum ordinate of 39 inches while the steel-jacketed bullet of same weight gave 34 inches, the same steel-jacketed bullet using 36 grains of rifleite giving 31.5 inches as maximum ordinate.

Some firing was done with this barrel, using a sample of lot of 30,000 rounds for machine-gun test. A mean velocity of 2,383 foot-seconds was obtained and the accuracy at 500 and 1,000 yards determined. The radii of circles containing five consecutive shots at 500 and 1,000 yards are 8.5 inches and 10.5 inches, respectively.

This barrel was then reduced in length 1 inch, making total length 29 inches. The mean velocity determined with sample of lot of 30,000 rounds for machine-gun tests was 2,383.9 foot-seconds, and the accuracy unchanged from that with 30-inch length of barrel.

This barrel was then cut off to 28 inches length. Mean velocity using same ammunition as before, 2,383 foot-seconds. Accuracy at 500 yards unchanged. But slight loss in accuracy at 1,000 yards, the radii of circles being 8.5 inches and 15.5 inches.

The maximum ordinates at 500 and 1,000 yards were then determined.

In the case of the 500-yard trajectory 112—35 grain copper bullets were used, the increase in the maximum ordinate being inappreciable.

In the case of the 1,000-yard trajectory the 112—36 grain bullets were used, the increase in the maximum ordinate being 18.25 inches.

August 12, 1895, a new barrel lighter in weight than the last was received and tested in connection with ammunition, using 112 grain steel-jacketed bullets and 32 grains of Troisdorf powder. Barrel 30 inches long, weighs 1,290 grams, and 28 inches long, weighs 1,250 grams. With 30 inch length of barrel a mean velocity of 2,559.4 foot seconds was obtained; with 28-inch length of barrel a mean velocity of 2,541 foot-seconds was obtained.

The trajectory at 500 and 1,000 yards was determined with 28 inch length of barrel, the maximum ordinate being 36.75 inches and 274 inches, respectively.

The regularity of this ammunition is responsible for the results obtained in firing for accuracy at 500 and 1,000 yards, the radii of circles being 3.9 inches and 7.9 inches.

TEST OF PROJECTILES.

The following projectiles were tested and accepted during the year:

Carpenter armor-piercing shell.—Thirteen-inch, lots Nos. 4, 5, 7, and 8.

Wheeler-Sterling steel common shell.—Thirteen-inch semiarmor-piercing, lots Nos. 1, 2, 3, 4, 5, 6, and 7.

American Projectile Company's wrought steel common shell and shrapnel.—Four-inch shrapnel, lot No. 2; 5-inch common shell, lot No. 6; 5-inch shrapnel, lots Nos. 1 and 2; 6-inch shrapnel, lots Nos. 1, 2, 3, and 4; 6-inch common shell, a lot of 168 projectiles; 4-inch common shell, lot 16; also lots Nos. 17, 18, 19, and 20 (no ballistic test).

The following projectiles were tested and rejected during the year:

Carpenter armor-piercing shell.—Thirteen-inch, lot No. 6.

EXPERIMENTAL AND MISCELLANEOUS TESTS.

Carpenter.—Four Carpenter 10-inch experimental projectiles were tested against 17-inch Harveyized nickel-steel plate; striking velocities, 1,983 and 1,930 foot-seconds, three of them getting only slight penetration and breaking up, one getting 12-inch penetration and rebounding whole.

Wheeler-Sterling.—Six 6-inch A. P. shell, fitted with soft steel caps, were tested against two 6-inch curved Harvey nickel-steel plates with 36 inches of oak backing. Striking velocity, 1,900 and 1,700 foot-seconds. Shell penetrated plate and backing.

Four Wheeler-Sterling 6-inch experimental shell, intended to carry bursting charges, were tested against a 7-inch nickel-steel oil-tempered plate. Shell penetrated; two broke up in butt in rear; remaining two were exploded in explosion chamber subsequently.

One Wheeler-Sterling 6-inch A. P. shell without cap was tested against 12-inch Harvey nickel-steel plate. Striking velocity, 1,900 foot-seconds; angle of impact, 7°. Shell broke up; head welded in plate.

Two Wheeler-Sterling 6-inch A. P. shell were tested against a 12-inch Harvey nickel-steel plate. Striking velocity, 2,050 and 1,700 foot-seconds. Both shell broke up on impact.

Seven Wheeler-Sterling 4-inch A. P. shell, part fitted with caps, were tested against 3-inch Harvey nickel-steel plate. Striking velocity, 600 1,700 and 1,600 foot-seconds. Those fired with 600 foot-seconds failed to penetrate and broke up; those fired with 1,600 and 1,700 foot-seconds penetrated and broke up.

Two Wheeler-Sterling 4-inch A. P. shell, one fitted with cap, were tested against 8-inch curved nickel-steel plate, with striking velocity of 1,960 foot-seconds. Penetration, 7 inches; the one fitted with cap rebounded and broke in two; the other rebounded whole.

Johnson.—Johnson 10-inch cast-steel common shot against 18-inch Harveyized nickel-steel plate. Shot No. 11 fitted with soft steel cylindrical cap. Striking velocity, 1,985 foot-seconds. Penetrated 15 inches; broke up and rebounded. Shot No. 12 same as No. 11. Penetrated 9.75 inches; broke up and rebounded. Shot No. 13 same as No. 11. Penetrated 15.5 inches, head remaining in plate. Body and base for length of 14 inches in one piece. Shot No. 15 was tested against 17-inch Harveyized nickel-steel plate. Shot fitted with cap same as No. 11. Penetration, 20 inches; remained in plate; base of shot 8 inches from face of plate; base and body of shot cracked.

Midvale-Holtzer.—Two Midvale-Holtzer 10-inch A. P. shell were tested against 17-inch Harveyized nickel-steel plate. Striking velocity, 1,983 foot-seconds. One shell penetrated 20 inches, rebounding 75 feet to

the front; shell in good condition, only slightly set up, and shortened. The other penetrated 12.5 inches, and rebounded 50 feet to the front; badly set up, scored, fused, and cracked.

American Projectile Company.—A 4-inch wrought-steel projectile was tested against a 2-inch gun shield with service velocity. Penetrated plate and broke up; shell broke square off 1 inch forward of band score. Angle of impact, 20°.

Two 4-inch steel common shell were tested against 2-inch wrought-iron plate. Striking velocity, 1,200 foot-seconds. Both shell penetrated plate, and were recovered in perfect condition.

Two experimental 6-inch shrapnel were tested by firing into butt and down range. Shrapnel recovered from butt uninjured.

United States Projectile Company.—Two 8-inch experimental steel common shell, made by the United States Projectile Company were tested against 4-inch steel plate. Striking velocity 1,000 foot-seconds. Shell penetrated plate and was recovered entire and uncracked.

COMPETITIVE TEST OF 13-INCH SEMIARMOR-PIERCING OR STEEL COMMON SHELL.

Plate used, 7-inch nickel steel, with 36 inches oak backing. Striking velocity, 975 foot-seconds. Two Wheeler-Sterling shell penetrated and were recovered whole and uncracked. One Carpenter shell penetrated, but broke up. Two Johnson shell were tested against this plate. One penetrated plate and backing and was recovered in fair condition. The other penetrated plate and 8 inches of backing and broke up. Two Midvale-Holtzer shell were tested against this plate. One penetrated plate and backing and was recovered entire; the other penetrated plate but broke up in the backing. One Taylor shell penetrated 2.8 inches and broke up.

One Blake 6-pounder shell was tested against two 3-inch steel plates made by the same company. Striking velocity, 1,788 foot-seconds. Penetrated plate and was recovered in four pieces. Two Blake 6-pounder shell were tested against a 3 inch rolled steel plate, with striking velocity of 1,760 foot-seconds. Both shell penetrated but broke up.

POWDERS.

Ordinary service powders.

Three lots of brown prismatic powder from the California Powder Works have been tested at this station during the last year with the following results:

Thirteen-inch B. L. R.—An experimental sample of large-grain powder, furnished by the above-mentioned works, was tested and found to be very violent and unsuitable for use in service. The grains of this powder weighed about 1 pound each.

Eight-inch B. L. R.—A sample of C. D., lot 1, index 212, previously tested (at Santa Cruz) and accepted, was retested at this station and found to give excessive pressure. This powder was recommended for issue for reduced charges only.

Five-inch R. F. G.—A sample of C. B., lot 3, gave excellent results in the 5-inch gun and was accepted.

Messrs. E. I. DuPont & Co. have furnished samples of brown prismatic powder for the 13-inch, 12-inch, 10-inch, 8-inch, and 6-inch B. L. R.'s, and 5-inch and 4-inch R. F. guns; also black cubical powders for the 6-pounder and 3-pounder, and fine-grain black powder for the heavy 1-pounder. These powders have been tested with the following results:

Thirteen-inch B. L. R.—W. S., lot 4, and W. S., lot 5, were rejected, as not coming up to the requirements of the specifications; but 15,000 pounds of the former lot were ordered for use at this station in 13-inch and 12-inch B. L. R.'s.

Twelve-inch B. L. R.—V. Y., lot 9, was rejected; V. Y., lot 10, was accepted; W. S., lot 5 (13-inch powder), was tested in the 12-inch gun, but was found to be also not suitable for that caliber.

Ten-inch B. L. R.—U. F., lot 31, was accepted; U. F., lot 33, fulfilled the requirements of the specifications as far as velocity and pressure was concerned, but was rejected on account of the service charge being too large; U. F., lots 32, 34, 35, and 36, were rejected; U. F., lot 37, has just been tested and its rejection recommended.

Eight-inch B. L. R.—U. T., lot 34, was accepted, and U. T., lots 35 and 36, were rejected; U. T., lot 37, has just been tested and recommended for acceptance.

Six-inch B. L. R.—S. M. A., lot 44, and S. M. A., lot 45, were accepted. Sample D, tested for the information of Messrs. DuPont & Co., fulfilled the requirements of the specifications.

Six-inch R. F. G.—No powder has been submitted for test in this gun, but 5-inch powder has been used in current work with good results.

Five-inch R. F. G.—V. Z., lots 28, 31, and 32, were rejected, and V. Z., lot 35, has just been tested and its rejection recommended. Samples A, B, and C, tested for the information of Messrs. DuPont & Co., failed to meet the requirements of the specifications. V. Z., lots 26, 29, 30, 33, 34, and sample E (V. Z., lot 27), failed to entirely meet the requirements of the specifications, but were accepted by the Bureau on account of the urgent necessity for 5-inch powder.

Four-inch R. F. G.—W. G., lots 7 and 8, were accepted.

Six-pounder R. F. G.—U. D., lots 29, 32, and 33, were rejected; U. D., lots 30, 31, and 34, were accepted.

Three-pounder R. F. G.—T. W., lots 13, 14, and 15, were accepted.

Heavy 1-pounder R. F. G.—W. A., lots 17 and 18, were accepted; W. A., lots 14 and 16, were rejected; W. A., lot 15, did not fully meet the requirements of the specifications, but was accepted by the Bureau of Ordnance.

Returned ammunition.

The *Miantonomoh's* 10-inch reduced charges, U. F., lot 26, index 158; U. F., lots 3 and 15 blended, index 134; U. F., lot 5, index 112, were retested and the charges were refixed.

The *New York's* 8-inch charges, U. T., lot 20, index 155; U. T., lot 21, index 160, and U. T., lots 6 and 9, index 119, were retested and results reported to the Bureau without recommendation, enough charges not having been received to make a complete test. The *New York's* 4-inch ammunition was retested and the cartridge cases carefully examined to find the causes of the splitting, but nothing abnormal could be discovered in the ammunition.

The *Detroit's* 6-inch charges of S. M. A., lot 38, index 127, were retested, reduced charges refixed, and full charges recommended for reissue unchanged. Thirty-three boxes of 6-pounder and 19 boxes of 1-pounder ammunition from the same ship were found to be in bad condition and were not recommended for reissue. Three boxes of 6-pounder ammunition were found to be in good condition and recommended for reissue.

The *Chicago's* 6-inch and 8-inch reduced charges were retested. O. P. A., index 37; O. P., index 19; U. T., lot 3, index 97; U. T., lot 6,

index 133, were recommended for reissue as reduced charges. Two more charges of S. D., index 39, were asked for before fixing the charge. S. M. A., lot 15, index 67; S. G. B., index 41, and R. G. A., lot 30, were not recommended for reissue.

Of the *Lancaster's* 6-pounder ammunition two lots were found to be fit for reissue. The results with sample rounds of the other four lots were not satisfactory, and recommendation concerning them was suspended until they could be tested further.

The *Boston's* 6-pounder ammunition was found to be fit for reissue. Of the 3-pounder ammunition from the same vessel one lot was found to be fit for reissue and one lot was not. Of the 47-millimeter ammunition two lots were found to be fit for reissue and one was not. Of the 37-millimeter ammunition one lot was fit to be reissued and two lots were not.

The *Columbia's* 6-pounder ammunition, which had been exposed to very high temperatures on board ship, was tested and was found to be unchanged.

The *Marion's* 37-millimeter ammunition was found to be unfit for reissue.

The *Adams's* 37-millimeter ammunition was found to be fit for reissue.

All of the *Portsmouth's* returned small-arm ammunition was found to be in excellent condition.

Check samples.

The following check samples have been tested during the year:

Six-pounder R. F. G.—U. P., lot 14, index 140, was tested and recommended for issue, with the charge unaltered. U. D., lot 17, index 170; U. D., lot 21, index 185; U. D., lot 22, index 186, were tested and recommended for issue, with charges slightly reduced. U. D., lot 18, index 172, gave results that did not agree with those obtained when the powder was originally tested, and there was some doubt as to whether the sample represented that original lot. U. D., lot 24, index 190, on retest was found to give excessive pressures.

Heavy 1-pounder R. F. G.—W. A., lot 10, index 194, was not recommended for issue, the charge having been limited to 130 grams. This powder did not give service velocity.

The following table gives a summary of the firing done during the last year:

Summary of all firing during the year, except smokeless powder.

Gun.	Powder tested and accepted.	Powder tested and rejected.	Number of rounds fired, all purposes.	Powder expended, all purposes.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
13-inch	.....	62,000	35	12,022
12-inch	30,000	45,000	33	13,225
10-inch	25,000	199,000	46	7,888
8-inch	90,000	60,000	118	12,207
6-inch	90,000	.....	235	9,906
5-inch	140,000	40,000	119	3,538
4-inch	60,000	.....	186	1,453
Field 3-inch	.....	.....	93	112
6-pounder	12,500	13,000	252	383
3-pounder	9,450	.....	43	89
47-millimeter R. C	.....	.....	10	6
Heavy 1-pounder	3,100	1,300	210	44
37 millimeter R. C	.....	.....	25	7
Ignition	.....	.....	.....	1,070
Total	460,050	420,300	1,405	62,040

Smokeless powder.

Three samples of smokeless powders from the torpedo station, Newport, R. I., have been tested with very good results. The following tables gives the characteristic rounds in each of these samples:

Table showing characteristic velocities and pressures of samples of torpedo-station smokeless powders tested during the year.

Gun.	Powder.	Charge.	Ignition powder.	Weight of projectile.	Muzzle velocity.	Pressure.	Remarks.
				Lbs.	*Ft.secs.*	*Tons.*	
6-inch R. F. 40 calibers.	Torpedo-station smokeless. K. F.$_1$, flat grooved stripe 7¾ inches long.	33	45 grams musket, in bottom section.	100	2,407	13.7	Sharp report; flame from muzzle; discharge not smokeless, but smoke not thick enough to interfere with sighting.
Do	do	33	90 grams musket; 45 grams, in each of two bottom sections.	100	2,495	15.3	Do.
4-inch R. F. 40 calibers.	Torpedo station smokeless, K. D.$_2$, flat grooved strips 24 inches long.	7.5	20 grams	33	2,256	13.2	Discharge practically smokeless.
Do	do	7.5	20 grams musket, in muslin bag and 8 inch tube.	33	2,254	13.4	Do.
Do	do	7.5	20 grams Walsrode initial, in muslin bag.	33	2,257	14.6	Do.
Do	do	7.5	30 grams musket, in muslin bag and 8-inch tube.	33	2,220	14	Discharge practically smokeless.
Do	do	8	1 grain compressed black powder; weight, 45 grams.	33	2,154	12	Comparatively little smoke; no flame at muzzle.
Do	do	8.5	do	33	2,309	14.5	Report not very sharp; slight flame at muzzle.
Do	do	8.5	do	33	2,291	13.4	Do.
Do	do	8.7	do	33	2,375	14.9	Report not very sharp; no flame at muzzle; discharge practically smokeless.
Do	do	8.7	45 grams musket, in muslin bag.	33	2,485	18.2	Sharp report; no flame at muzzle; discharge practically smokeless.
Do	Torpedo-station smokeless, K. D.$_4$, flat grooved strips, 23 inches long.	7	20 grams musket, in muslin bag.	33	2,023	10.9	Three rounds fired for future comparison, with three rounds loaded up and put away for keeping test; a considerable amount of blue-black smoke, not enough to interfere with sighting; no flame; odor of fumes in first round that of ignition powder used; in second and third rounds, distinctly nitrous.
Do	do	7	do	33	2,105	12.1	
Do	do	7	do	33	2,055	11.3	
Do	do	8	do	33	2,316	13	Considerable amount of blue-black smoke, not enough to interfere with sighting; odor of fumes that of ignition powder used; no flame.

Table showing characteristic velocities and pressures of samples of torpedo-station smokeless powders tested during the year—Continued.

Gun.	Powder.	Charge.	Ignition powder.	Weight of projectile.	Muzzle velocity.	Pressure.	Remarks.
				Lbs.	*Ft.secs.*	*Tons.*	
4-inch R. F., 40 calibers.	Torpedo-station smokeless, K. D_4, flat grooved strips, 23 inches long.	7.5	20 grams musket, in muslin bag.	33	2,191	13	Same remarks as in last round; this and subsequent rounds fired for comparison of K. D_4 with K. D_2.
Do	do	7.5	20 grams Walsrode initial, in muslin bag.	33	2,100	11.2	Same remarks, except that smoke of discharge was very slight.
Do	do	7.5	20 grams musket, in muslin bag and tube 8 inches long.	33	2,112	11.1	Considerable amount of blue-black smoke, not enough to interfere with sighting; odor of fumes that of ignition powder used; no flame.
Do	do	8	1 grain compressed black powder; weight, 45 grams.	33	2,270	13	Do.
Do	do	8.5	do	33	2,391	16.2	Do.

The test of Walsrode smokeless cannon powder No. 32, from the Walsrode Smokeless Powder Company, reported on in the last annual report, was continued in the 1-pounder R. F. G. with a special view to determining the effect of the ignition powder.

The results were as follows:

Table showing characteristic velocities and pressures of Walsrode smokeless cannon powder No. 32.

Gun.	Powder.	Charge.	Ignition powder.	Weight of projectile.	Muzzle velocity.	Pressure.	Remarks.
		Grams.		*Lbs.*	*Ft.secs.*	*Tons.*	
Heavy 1-pounder R. F. G., 40 calibers.	Walsrode smokeless cannon No. 32, small flat grains.	45	10 grams Walsrode initial.	1	*a*1,407	5	Discharge practically smokeless.
Do	do	45	15 grams Walsrode initial.	1	*a*1,642	6.2	Do.
Do	do	45	20 grams Walsrode initial.	1	2,014	13	Discharge smokeless; a little powder unburned; short flame from muzzle.
Do	do	75	10 grams musket.	1	*a*1,570	5.4	Some smoke; very little fouling; powder all burned.
Do	do	75	20 grams musket.	1	*a*1,768	5.3	Do.
Do	do	75	30 grams musket.	1	*a*1,922	9.3	Some smoke; no fouling; powder all burned.
Do	do	85	10 grams musket.	1	2,023	8	Smoke of discharge about one-third as great in volume as when using black powder, but thinner and dissipating more rapidly; powder all burned; no flame from muzzle.
Do	do	82	20 grams	1	2,077	6.6	A little unburned powder in bore.

a These velocities are from 30 to 50 feet too low, on account of using pressure-gauge ousings. Other velocities are correct, having been determined by using service shell.

Samples of all the smokeless powders tested during the year have een kept under observation in the high explosive magazine, where hey are exposed to considerable variation in temperature and moisture. Up to the present they have shown no signs of deterioration.

About 335 pounds of Leonard smokeless powder and 5 pounds and pounds, respectively, of the high explosives called "jovite" and panolite" were destroyed, as it was suspected that they were deterioating.

PERSONNEL.

The following are the names of the officers who have been attached o this station during the past year, and the distribution of their duties:

Ensign C. P. Plunkett: Reported for duty December 15, 1895. Assistant inspector of ordnance, in charge of mounts and carriages, projectiles, fuses, the explosion chamber, small arms and ammunition, the firing butts, and all experimental work not otherwise assigned; also senior member board of inspection and observer at chronographs.

Ensign F. W. Jenkins: Assistant inspector of ordnance, in charge of powder magazine, filling house, pressure gauges, etc.; observer at the chronographs.

Ensign M. L. Miller: Assistant inspector of ordnance, in charge of guns, sights, cartridge cases, primers, armor plate and backing, and chronographs; member of the board of inspection.

Gunner P. Hanley: In charge of crane, handling guns and ordnance material; in charge of time book; general supervisor around the batteries; member of board of inspection.

Asst. Surg. C. De W. Brownell: Medical officer.

Pay Clerk J. J. Gering: In charge of accounts.

Ensign R. D. Tisdale was also on duly at this station for three months, having been detached in December, 1894.

All of the above-mentioned officers have performed the various duties required of them in a zealous and satisfactory manner.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance, in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

ANNUAL REPORT OF THE INSPECTOR OF ORDNANCE, CRAMP'S GUN WORKS.

OFFICE OF INSPECTOR OF ORDNANCE,
CRAMPS' GUN WORKS (DRIGGS ORDNANCE COMPANY),
Philadelphia, Pa., September 9, 1895.

SIR: During the fiscal year ending June 30, 1895, there were delivred from these works fifteen 6-pounder D.-S. R. F. guns, with spare arts and accessories; one 1-pounder D.-S. R. F. gun, with spare parts, ccessories, top mount, cage stand, deck circles, limber, field carriage, tc.; one Accles machine gun, .30 caliber, with mount, naval landing arriage, spare parts, etc.; 3,475 6-pounder shell, 2,748 3-pounder shell, 843 1-pounder shell, and about 2,500 extra miscellaneous spare parts, ccessories, and equipments for guns of the three calibers—6, 3, and 1 ounders.

On the 1st of July last there remained to be delivered, under existing rders, five 1-pounder D.-S. R. F. guns (these have since been delivred), 2,100 6-pounder shell, 2,748 3-pounder shell, and 1,000 1-pounder hell.

There were on hand or in process of manufacture here on the 1st of July last the following, not covered by Government orders, but intended for stock: One 4-inch D.-S. R. F. gun completed and three nearing completion; two 12-pounder D.-S. R. F. guns, completed (and carriages building for same); twenty-eight 6-pounder D.-S. R. F. guns, ready except browning and marking, and thirty more under way; three 3-pounder D.-S. R. F. guns, shrunk, and nine in preparation for shrinking; ten 1-pounder, D.-S. R. F. guns, nearing completion, and nine more under way; twenty-five 6-pounder cage stands, completed; twenty-five 6-pounder recoil mounts, well under way; twenty-five 1-pounder cage stands, partly finished; twenty-five 1-pounder recoil mounts, completed; fifty 1-pounder deck circles, partly finished, and 2,697 6-pounder common shell (new design), completed.

The accompanying tables show in detail the material referred to in paragraph 1 of this report.

Respectfully, SAM. W. VERY,
Commander, U. S. N., Inspector of Ordnance.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

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Table showing in detail mechanism, spare parts, etc., delivered from Cramps' Gun Works during fiscal year ending June 30, 1895.

Descriptive name.	6-pounder.	3-pounder.	1-pounder.
Firing pins	42	11	10
Firing points	258	50	100
Mainsprings	112	15	20
Field-gun mainsprings	16	8	.....
Sear springs	100	15	20
Sear-spring keepers	50	10	15
Extractors, right and left ... sets	25	5	5
Pawls	50	10	.....
Pawl springs	50	10	.....
Locking pins	.....	.....	15
Face plates	20	5	5
Face-plate screws	20	5	5
Gun screws ... sets	20	5	10
Guide bolts	20	5	10
Removable drill-washer supports	26	5	10
Rubber drill washers	1,000	250	500
Cocking hook and wrench	6	.....	.....
Lanyard chains	12	.....	.....
Pistol grips	28	.....	.....
Deflectors	27	.....	.....
Accessory chests, complete	.....	2	.....

Table showing in detail shell delivered from Cramps' Gun Works during fiscal year ending June 30, 1895.

Descriptive name.	6-pounder.	3-pounder.	1-pounder.
Common	1,268	450	796
Common, loaded and fused	.....	920	4,047
A. P.	2,182	1,378	.....
A. P., loaded and fused	25	.....	.....

ANNUAL REPORT OF THE INSPECTOR OF ORDNANCE, CRAMP'S SHIPYARDS.

OFFICE OF NAVAL INSPECTOR OF ORDNANCE,
CRAMP'S SHIPYARD,
Philadelphia, Pa., September 11, 1895.

SIR: During the first part of the fiscal year ending the 30th of June, 1895, the installation of ordnance on the vessels under construction here was under the inspector of ordnance of the League Island Navy-Yard. Since the 11th of February last, the inspection at this yard has been independent of the inspectorship at League Island.

It is respectfully suggested that in future specifications for Government vessels a clause may be inserted providing for offices for the inspector of ordnance and his assistants, in the same way that other Government inspectors are now provided for.

At the beginning of the year (July 1, 1894) ordnance work was in progress on board the *Minneapolis* and the *Indiana*, both at this yard, and on board the *Columbia* at League Island. About the middle of July the *Columbia* sailed, and on the 8th of December the *Minneapolis* was towed to League Island and turned over to the authorities there. Since those dates this office has had no direct connection with either of those two vessels. Work on board the *Indiana* continued throughout the fiscal year—on the installation of the torpedo outfit, the installation of the secondary battery and the smaller guns of the main battery, the installation of the range-finder system, and the beginning of the installation of the guns of heavy caliber and the machinery for handling them.

On board the *Massachusetts* ordnance work began in December, and it was continued throughout the remainder of the year.

No ordnance work was done on board either of the two other Government vessels here (the *Brooklyn* and the *Iowa*), both of which are still on the stocks.

Respectfully, SAM. W. VERY,
Commander, U. S. N., Inspector of Ordnance.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

TEST OF THE HURST 8-INCH GUN.

NAVAL PROVING GROUND,
Indian Head, Md., December 22, 1894.

SIR: I have to make the following report of the test, up to date, of the Hurst .50-caliber 8-inch rapid-twist reenforced cartridge B. L. R.

This gun was mounted on the *Amphitrite's* 10-inch hydraulic turret mount No. 13.

Round 1.—Fired October 26, 1894. Projectile, Hurst 8-inch cast-iron, weighing 250 pounds, with a diameter of band of 8.13 inches. Outer charge, an annular wooden stool, with three legs, was placed in the bottom of the outer cylinder, on which were placed two cylinder pressure gauges, and then 100 pounds S. M. A. 40, index 141 (6-inch brown powder), was poured in loosely into the annular space of the outer cylinder, just filling it, so that a perforated wooden disk could be placed in mouth of case to keep the powder in. A brass three-winged

conical guiding frame was then secured onto the front end of the inner tube, down onto this wooden disk. Inner charge, 8 pounds of U. F. 31, index No. 207 (10-inch brown powder), made up as a 4-inch charge, with 4 grains of black ignition powder and two cylinder pressure gauges in rear layer, was placed in the inner tube; in addition an igniter made of tissue paper filled with 5 grams musket powder was pasted over the holes on the inner side of copper-cup gas check in rear end of the inner tube, to insure ignition of charge. The space between this charge and the tail of the projectile was filled in with paper to keep the charge to the rear.

On firing the following results were obtained:

Muzzle velocity	1,618 foot-seconds.
Pressures:	
Inner tube, 7.0, 6.5.m	6.8 tons.
Outer case, 5.7, 5.7	5.7 tons.

The tail broke off of projectile, the weight of the head, which wa[illegible] recovered, being 147 pounds.

Round 2.—Fired same day. Cast-iron Hurst projectile; diameter [illegible] band, 8.13 inches. Outer charge, 142 pounds S. M. A. 40, index 1[illegible] (6-inch brown powder), loaded as in previous round, except that the[illegible] was no stool; pressure gauges in bottom of case; powder poured in a[illegible] shaken down as much as possible, and as much powder put in as t[illegible] case would hold. Inner charge increased to 10 pounds U. F. 31, ind[illegible] No. 207 (10-inch brown powder), loaded as in previous round.

On firing the following results were obtained:

Muzzle velocity	2,196 foot-seconds.
Pressures:	
Inner tube, 9.5, 10.4	9.9 tons.
Outer case, 9.0, 9.2, 10.0	9.4 tons.

Tail of projectile evidently broke off in gun, as two gouges were found in smooth part of bore, the worst one being about 1¼ inches long and one-fourth inch deep. The weight of the head of projectile recovered with small portion of the tail attached was 152 pounds. The muzzle velocity obtained was probably increased by the breaking off of the tail of the projectile while in the gun, thereby reducing its weight.

Round 3.—Fired October 30, 1894. Projectile, Hurst 8-inch cast-iron; diameter of band, 8.13 inches. Outer charge, 172¼ pounds S. M. A. 40, index 141 (6-inch brown powder), built up into an annular charge, was put into the outer case with some loose grains, and three cylinder pressure gauges in the bottom, and the upper end outside of the case coned and covered with a perforated tin case to keep the powder in case. Inner charge, 12 pounds U. F. 31, index No. 207 (10-inch brown powder), loaded as in previous rounds.

On firing the following results were obtained:

Muzzle velocity	2,452 foot-seconds.
Pressures:	
Inner tube, 15.8	15.8 tons.
Outer case, 13.3, 13.1, 12.2	11.9 tons.

Tail of projectile broke off in gun, injuring the grooves of rifling slightly, and the velocity was probably increased by diminished weight of the projectile.

Round 4.—Fired November 16, 1894. A service 10-inch plug, with mushroom, disks, and gas check, was then put in gun in place of the Hurst breech mechanism, and the gun was fired with single charges and service shell. Projectile used, common cast-iron shell, weighing 250 pounds, with a diameter of band of 8.11 inches. This projectile

was loaded clear in to the origin of the rifling, and on that account the small band was used, as one of a larger diameter could not be loaded into the cylindrical portion of the bore. Charge, 150 pounds U. F. 29, index No. 168 (10-inch powder).

On firing the following results were obtained:

Muzzle velocity	1,984 foot-seconds.
Pressures with mushroom gauges, 8.7, 8.8, 9.0	8.8 tons.

Round 5.—Fired the same day. Single charge, 200 pounds U. F. 29, index No. 168 (10-inch powder). Projectile, cast-iron common shell, weight, 250 pounds, with a diameter of band of 8.09, loaded in to the origin of the rifling.

On firing the following results were obtained:

Muzzle velocity	2,357 foot-seconds.
Pressures, 13.8, 13.2 (lost)	13.5 tons.

No powder blown out unburned.

Round 6.—Fired same day. Single charge. Projectile, 8-inch common cast-iron shell; weight, 250 pounds, with a diameter of band of 8.13 inches. Shell loaded so that band stuck at rear end of cylinder in the same position occupied by the band of the Hurst projectile, decreasing the cubical contents of the chamber by about 210 cubic inches below that in the last two rounds.

On firing the following results were obtained:

Muzzle velocity	2,563 foot-seconds.
Pressures, 17.7, 17.2, 16.8	17.2 tons.

No unburned grains of powder were blown out.

Round 7.—Fired December 8, 1894. The Hurst mechanism was replaced in the gun, and these rounds fired, using forged projectiles. Projectile, 8-inch Hurst forged steel, A. P., with forged tail; weight, 250 pounds, with a diameter of band of 8.14 inches. Outer charge, 179.5 pounds S. M. A. 40, index 141 (6-inch brown powder), loaded as in previous rounds. Inner charge, 10 pounds U. F. 31, index 207 (10-inch brown powder).

On firing the following results were obtained:

Muzzle velocity	2,378 foot-seconds.
Pressures:	
Inner tube, 15.7, 13.8	15.7 tons.
Outer case, 12.1, 12.3, 11.7	12 tons.

Head of projectile went into butt, and tail struck top frame of butt, glanced up into the woods and was lost. The head was recovered from the sand in two pieces, with fracture at or near band score. The end of the tail presented a very peculiar appearance, being drawn out and reduced in diameter at the extreme end exactly like a magnified test specimen that had been pulled. Weight of head, 108 pounds; weight of tailpiece and portion of head, 52 pounds.

Round 8.—Fired the same day. Hurst loading. Projectile, 8-inch Hurst forged steel A. P. shell, with a diameter of band of 8.12 inches. Outer charge, 172 pounds, same powder as in last round. Inner charge, 9 pounds, same powder as in last round, with method of loading the same.

On firing the following results were obtained:

Muzzle velocity	2,290 foot-seconds.
Pressures:	
Inner tube, 17.3, 17.5	17.4 tons.
Outer case 11.3, 9.8, 11.8	11.5 tons.

Tail of projectile pulled off as in previous round. The head and about 10 inches of tail, weighing 180 pounds, in one piece, and the remaining portion of tail, weighing 70 pounds, in the other. This tail broke just like a pulled test specimen, the same as in the previous round having decreased in diameter to 2 inches at break, and having increased in length 5.6 inches. In all probability the outer charge was ignited before the tail left the inner tube, causing the pressure to grip the mouth of the inner tube and the tail of the projectile, holding on to the latter. The inner tube could not stand a pressure of 17 tons on the inside without having some pressure on the outside to help it. The inner tube has since been examined, and apparently has not changed its dimensions.

Duplicate copies of photograph No. 358, showing Hurst 8-inch projectile loaded and completed, ready for going into gun; No. 358*a*, showing the powder cases and cast-iron projectile separated; No. 358*b* showing a cast-iron projectile marked 0; the forged steel A. P. projectile, as recovered after the seventh round, marked No. 1, and forged steel A. P. projectile after the eighth round, marked No. 2.

Further reports of the test of this gun will be forwarded as they take place.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

FURTHER TEST OF HURST 8-INCH GUN.

NAVAL PROVING GROUND,
Indian Head, Md., March 26, 1895.

SIR: I have to make the following report of a further test of the Hurst 8-inch rapid-twist reenforced cartridge gun, made at this station on March 23, 1895:

Round 9.—Charge in outer cylinder, 5 pounds S. M. A., No. 44, broken grains, in bottom of cylinder; 161 pounds of the same powder in the cylinder proper, and 9.5 pounds in a cone on top of the cylinder, making a total of 175.5 pounds of powder in the cylinder proper. Charge in the inner cylinder, 10 pounds U. F., No. 31. The tube had four perforated plugs, situated 4.75 inches inside its mouth, these plugs being so arranged as to allow gas to escape when a pressure of 2,000 pounds was reached. Projectile weighing 255.5 pounds, with an armor-piercing head and tool steel tail, of form and dimensions as per sketch No. 1 appended hereto, rotating band being 1.25 inches wide and plain, was fired through the screens with the following results:

Muzzle velocity	2,088 foot-seconds.
Mean pressure in inner cylinder	10 tons.
Mean pressure in outer cylinder	11.5 tons.

The projectile struck vertical pine boards at entrance of butt, making a vertical keyhole about 8 by 12 inches, and evidently broke up immediately on striking the sand. The head, with the tailpiece broken off close, was found 25 feet back in the butt and about 3 feet below the plane of entrance. This projectile was fractured, as shown in sketch No. 2, appended hereto, one piece being 17 inches long and two others

about 12 inches long, the last two being a longitudinal split through the center of the tailpiece. These pieces of tail were found from 1 to 15 feet inside the butt.

Round 10.—Charge in outer cylinder, 5.5 pounds S. M. A., No. 44, broken grains, in bottom; 163 pounds of the same powder in the cylinder proper, with 9 pounds in cone on the top, making a total of 177.5 pounds of powder in the outer cylinder; charge in the inner cylinder, 10 pounds U. F., No. 31. Projectile of same weight and dimensions as in previous round, as shown in sketch No. 1, but with rotating band 1⅜ inches wide and containing three grooves, was fired through the screens with the following results:

Muzzle velocity	2,096 foot-seconds.
Pressure in inner cylinder	12.3 tons.
Pressure in outer cylinder	11.8 tons.

The projectile struck vertical boards, making a keyhole of about the same dimensions as in the last round, but inclined at an angle of about 45° with the vertical. The head, with the tail broken off short, was found 24 feet back in the butt and 3 feet above the plane of entrance. The tail was broken short off at base into three principal pieces, as shown in sketch No. 3, appended hereto, one fracture being at base of projectile, another 12 inches from the rear, and another about 2 inches from the rear end of tail. These pieces of tail were also found from 1 to 14 feet inside the sand.

In my opinion, these projectiles did not break up until after they struck the butt, as no more than four wires were broken on any of the screens during the two rounds, and there were no evidences of other pieces striking the butt in any places except those mentioned on the vertical boards.

Very respectfully, your obedient servant,

N. E. MASON,
Lieutenant, U. S. N., Inspector of Ordnance, in Charge.

The CHIEF OF BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

REPORT OF BOARD ON SMALL ARMS.

NAVAL SMALL ARMS BOARD,
Torpedo Station, Newport, R. I., October 22, 1894.

SIR: In accordance with the Department's orders the board met at the torpedo station, Newport, R. I., on Tuesday, October 2, 1894, for the purpose of testing such guns as were submitted in accordance with the Department's circular dated March 15, 1894, and has the honor to report as follows:

The following rifles were entered by inventors or their agents, and were put through the programme of tests as far as practicable, the board adjourning from day to day:

Miles.—Rotating bolt; side magazine.
Briggs-Kneeland.—Straight-pull bolt; double-loader; reserve side magazine.
Remington No. 1.—Rotating bolt; side magazine.
Remington No. 2.—Rotating bolt; side magazine.
Remington No. 3.—Rotating bolt; side magazine.
Remington No. 4.—Rotating bolt; side magazine.
Van Patten.—Sliding forearm movement; tubular magazine under barrel.
Daudeteau No. 31.—Rotating bolt; central under-receiver magazine.
Daudeteau No. 32.—Rotating bolt; central under-receiver magazine.
Russell-Livermore.—Rotating bolt; central under-receiver magazine.

The last-named gun was submitted for test of magazine system only.

Authority having been requested and given to the board by the Department to test such guns as might be submitted during the board's session, the provision of the Department's circular relating to the date of submittal was waived, and the following guns were received for test:

Remington No. 5.—Rotating bolt; side magazine.
Lee.—Straight-pull bolt; central under-receiver magazine.

The record of proceedings and a list of correspondence, together with copies of orders, circulars, and other letters received and sent by the board, are appended.

After a careful consideration of the requirements of the naval service and of the state of the art as exhibited in the guns submitted and in others known to the board the following conclusions were reached as to the features which should characterize a small-arm system for naval use, namely, safety, certainty of action, ease of manipulation, simplicity, capability of efficient use under all the various circumstances of service, rapidity of fire, and durability.

For safety it is necessary that the working parts be strong, that the breech block or bolt be well supported and locked before the firing pin can reach the primer, that the receiver be not too much cut away, that the firing pin be well backed up from the rear and be fitted with a locking device (which should also lock the bolt), that double loading from the magazine be impossible, and that the firing pin be retracted before the forward motion of the bolt begins.

For certainty of action it is desirable that the magazine system be simple and not easily clogged, that the firing pin be quick acting, that the trigger can not be pulled until the bolt is completely locked, that the extractor be strong and prevented from riding over the cartridge head under a heavy pull on the bolt, that the ejector throw the empty case clear of the gun, that a second cartridge be not freed from the magazine until the first has been ejected, that some indication be given when the magazine is empty, and that there be no cut-off.

Ease of manipulation requires that the bolt be supported by symmetrically placed lugs, preferably at its forward end; that the means of seating the bolt and of starting the empty cartridge case be powerful, that the mainspring be either light or that it be compressed by the movements of rotation of the bolt, and that the bolt have a good bearing in the receiver.

Simplicity results from a small number of pieces with as few screws, springs, and small pins as possible, taken apart and put together without special tools, and from ready accessibility of parts.

The repeating system, with which the firing is from a magazine loaded by means of chargers or clips, is considered best suited to naval use; but since the conditions of service may require the use of loose cartridges, or may result in the disabling of the magazine, it is desirable that the small arm be susceptible of use as a single loader, and that the magazine be capable of being replenished by single cartridges.

Insufficient cleaning or lubrication should not prevent easy working, nor should exposure to dust and rain so clog the working parts as to render them inoperative.

For rapid fire at all times a magazine charged from light and reversible clips or chargers is necessary, and it is desirable that these clips or chargers should not form an essential part of the magazine mechanism. It is also desirable that when used as a single-loader no special care be necessary in placing the cartridges.

Rapidity of fire should not be too much hampered by devices designed to prevent waste of ammunition or to insure safety from accident.

These being the features which the board considers should be embodied in the ideal small arm for military use, the following are the defects found to exist in the different systems tested:

VAN PATTEN.

This gun was lacking in all the essential features of a modern military arm, and was so crude and undeveloped in design as to be out of the field of possible adoption.

DAUDETEAU.

(1) The firing pin, with connected parts, is so heavy as to result in very sluggish action, with consequent frequent misfires.

(2) The trigger can be pulled before the bolt is locked.

(3) The extractor rides over the cartridge rim in cases of hard extraction.

(4) No indication is given when the magazine is empty.

(5) The clips are not reversible.

(6) In firing from the magazine the cartridge is not guided with certainty into the chamber, but is liable to be jammed by having its point raised so as to catch in the corner of the receiver at the rear face of the barrel.

(7) In firing as a single-loader care is necessary in placing the cartridges, or the same jamming as above will result.

REMINGTON NO. 1.

(1) There is no safety lock for firing pin or bolt.

(2) Double loading by forward movement may occur.

(3) The trigger can be pulled before the bolt is locked.

(4) The ejection, being to the left, can not be made strong without inconvenience to the operator, and consequently sometimes fails to be efficient.

(5) Ejection requires complete rearward movement of the bolt, and failure to make this movement results in double loading.

(6) No indication is given when the magazine is empty.

(7) The magazine system is not readily accessible without dismounting.

(8) The magazine can not be replenished by single cartridges without great difficulty.

(9) The clips are not reversible.

REMINGTON NO. 2.

This gun differs from Remington No. 1 only in having its magazine hinged upon a transverse instead of upon a lengthwise pin, thus rendering it somewhat more accessible.

REMINGTON NO. 5.

(1) Double-loading forward movement may occur.

(2) The magazine system is complicated and very liable to get out of order.

(3) The trigger can be pulled before the bolt is locked.

(4) Ejection being to the left can not be made strong without inconvenience to the operator, and consequently sometimes fails to be sufficient.

(5) No indication is given when the magazine is empty.

(6) The cam motion in the first part of extraction is short, and results in occasional failures to free sticking cases.

(7) One special tool, two screw-drivers, and a driftpin are required to disassemble and assemble; there are numerous small screws and springs, and complete disassembling is necessary in order to get at the magazine feed.

(8) The clips are not reversible and require careful adjustment in charging the magazine.

(9) Only four cartridges can be placed in the magazine with the bolt open.

(10) Unless the bolt is completely and sharply withdrawn the cartridge is not thrown up properly and jams as the bolt is moved forward.

(11) Unless the cut-off is on great care is necessary in placing the cartridges in single loading.

REMINGTON NO. 3.

This gun differs from Remington No. 5 principally in having a left-hand magazine and a slightly different method of operating the magazine feed. All the defects of No. 5, excepting the left-hand ejection, are found in No. 3, with the additional disadvantage of a magazine on the left side.

REMINGTON NO. 4.

This gun differs from Remington No. 5 principally in having a left-hand magazine with its attendant disadvantages.

A somewhat more convenient, but heavier, loading clip was used with Remington Nos. 3 and 4 than with No. 5.

LEE.

(1) The bolt is not sufficiently strong and is supported too far to the rear.

(2) There is no lock on the firing pin. The bolt, however, is locked when closed.

(3) The trigger can be pulled before the bolt is completely locked.

(4) The cam motion in the first part of extraction is short, and results in occasional failures to free sticking cases.

(5) Too much clearance in the magazine allows the clip to move forward, sometimes jamming the upper cartridge by depressing its point on the forward movement of the bolt.

(6) The clip forms an essential part of the magazine mechanism.

BRIGGS-KNEELAND.

This gun is intended to be used as a double shotgun, two cartridges being inserted at a time and fired in succession, while a fixed magazine holding five cartridges is held in reserve. It was examined by the board, but not tested.

The system of which this arm is an exponent is not one which the board would recommend for military use.

MILES.

(1) The trigger can be pulled before the bolt is completely locked.

(2) The extractor being very long, it is difficult to prevent its riding over the cartridge rim.

(3) No indication is given when the magazine is empty, and the position of the mouth of the magazine is such as to prevent its being readily observed as the bolt is withdrawn whether another cartridge remains to be fired.

(4) There being five points of support for the bolt at different distances from the front face, the manufacturing difficulty of getting equal bearings causes one or more of the supports to bear all the strain, rendering hard working probable.

(5) The magazine is not readily accessible to clear jammed cartridges.

(6) The clips are clumsy, nonreversible, and require very careful adjustment to prevent spilling cartridges.

(7) The cartridges may be jammed in the magazine either by not entering them carefully or by improper action of the follower spring, and the last cartridge frequently fails to be fed up, and is sometimes ejected from the magazine when the latter is opened.

RUSSELL-LIVERMORE MAGAZINE.

The lack of development is considered to be the principal fault of this system. Its defects are:

(1) The possibility of a distorted clip jamming in the magazine.

(2) The clips are not reversible.

(3) The method of securing the cartridges in the clip by a leather strap, which must be released as the clip is entered into the magazine, is unsatisfactory.

While a considerable number of defective features have been pointed out as existing in each of the guns submitted, it is not the board's intention to imply that none of the systems tested are meritorious, or give promise of great efficiency after further development.

The bolt action of the Remington guns was excellent, and only a better magazine system is needed to make any one of them a very efficient weapon.

The Lee gun, while a radical departure from the usual type, has features of great value, and if the defects developed in its tests are overcome will compare favorably with any other in use at home or abroad.

The Daudeteau rifle, in addition to other good features, possesses the advantage of an arrangement which renders double feed by forward movement impossible.

The Russell-Livermore magazine likewise possesses several advantageous features.

Other American inventors, as well as some foreign makers, have only been prevented from submitting guns by the short time given them to prepare in, due to unavoidable delay in the delivery of rifle barrels and ammunition.

The standard set is high, and the gun finally adopted may not entirely fulfill all the desired conditions, but the board is of opinion that a further extension of time for the development of designs will result in the adoption of a much more efficient and desirable arm than any now before it.

The board therefore recommends that another trial be held in about six months from date, and that meanwhile inventors and others inter-

ested be informed as to the main features desired in an arm for the naval service, and be invited to again submit guns in competition under the conditions laid down in the Department's circular of March 15, 1894.

Very respectfully,

G. A. CONVERSE,
Commander, U. S. N., President Naval Small Arms Board.

PHILIP R. ALGER,
Professor, U. S. N., Member.

LINCOLN KARMANY,
First Lieutenant, U. S. M. C., Member.

A. C. DIEFFENBACH,
Ensign, U. S. N., Member.

The Honorable SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

NAVAL SMALL ARMS BOARD,
Torpedo Station, Newport, R. I., November 22, 1894.

SIR: In accordance with the directions of the Department, the Naval Small Arms Board met at the torpedo station, Newport, R. I., on Monday, November 19, 1894, for the purpose of testing such arms as had been submitted since its last meeting, and has the honor to report as follows:

The rifles submitted were the Luger and Durst.

The Luger gun is of the rotating-bolt pattern with a central, under-receiver magazine; the caliber is 6 millimeters, but the cartridge is rimless and the body is that of a 6.5 millimeter cartridge.

The Durst gun has a rotating bolt with under-receiver cylindrical magazine; the cartridge is the Navy design, except that it is semirimless with cannelure.

A representative of the Briggs-Kneeland gun appeared before the board and stated that this arm was not completed, but would be submitted at a later date if the board were again convened.

A record of proceedings and a list of correspondence, together with copies of orders and of letters sent and received by the board are appended.

After the tests, and due consideration in accordance with the conclusions reached by the board as to the requirements of a small arm for naval use, as laid down in its report of October 22, 1894, the following were found to be the defects existing in the arms submitted.

DURST GUN.

(1) The receiver and bolt are not sufficiently strong and the latter is supported too far to the rear.

(2) The locking device is put in action by the dangerous operation of half-cocking from a full cock.

(3) Double loading by rear movement may occur.

(4) The firing pin is sluggish, probably from too light a mainspring, causing frequent missfires.

(5) The magazine is easily clogged and difficult of access.

(6) The extractors pull over the cartridge head in a very hard extraction, and the use of two extractors is considered unnecessary and therefore undesirable.

(7) There is no indication of an empty magazine.

(8) The supporting lugs are unsymmetrically placed on the bolt.

(9) The clips are somewhat clumsy, and at times it is difficult to strip them into the magazine.

(10) Failure to force the last cartridge completely down into the magazine results in double loading.

LUGER GUN.

(1) The trigger can be pulled before the bolt is completely locked.

(2) There is no indication of an empty magazine.

(3) A special tool and a pin are required for dismounting the magazine system.

The Durst gun went through the endurance test with much difficulty, and failed completely by rupturing the receiver during the excessive pressure tests, being then withdrawn.

The Luger gun went through all the tests in a practically perfect manner.

The cartridges used in the Durst gun were loaded and prepared in England and contained a felt wad in addition to the standard charge of powder of 36 grains of rifleite. This probably resulted in greater pressures than obtain with the standard ammunition although the mean velocity of ten cartridges taken at random was but 2,395 foot-seconds as compared with the standard of about 2,450 foot-seconds.

In addition the standard cases were slightly weakened by being cannelured just forward of the rim.

The above features may have partially caused the difficult working of the gun; but it is believed that the rupture of the receiver was primarily due to its material and the location of the recoil lugs.

The slightly greater capacity of the case of the cartridge used in the Luger gun resulted in a less pressure as well as slightly less velocity (about 70 foot-seconds) than obtain with the standard 6-millimeter ammunition, and to this may partially be attributed the total absence of any difficult extraction or hard working of the bolt. But aside from these facts this gun is believed to excel in merit any yet presented or known to the board.

It is the opinion of the board, however, that the standard of muzzle velocity set should be obtained, and, if possible, with the present design of cartridge case; and the gun to be adopted should demonstrate its ability to fulfill the requirements of the service arm with the service ammunition.

The board considers it very desirable that a Luger rifle, adapted to the present design of Navy cartridge (but rimless) should be among the guns tested at the final trial recommended by the board in its previous report; and, if necessary to insure this, one or more of these rifles should be purchased by the Department.

Should this be impracticable, the board recommends that the Department secure an extension, to a date not earlier than June 1, 1895 of the option to purchase the right to manufacture the Luger rifle.

Very respectfully,

GEORGE A. CONVERSE,
Commander, U. S. N., Senior Member Naval Small Arms Board.

PHILIP R. ALGER,
Professor, U. S. N., Member.

L. KARMANY,
First Lieutenant, U. S. M. C., Member.

A. C. DIEFFENBACH,
Ensign, U. S. N., Member.

The Honorable SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

NAVAL SMALL ARMS BOARD,
Torpedo Station, Newport, R. I., May 15, 1895.

SIR: In accordance with the Department's orders of April 2 the board convened at the torpedo station, Newport, R. I., on Monday, April 15, for the purpose of testing such guns as were submitted in accordance with the Department's circular of March 15, 1894, and has the honor to report as follows:

The following rifles were entered by inventors and were put through the programme of tests, the board adjourning from day to day:

Lee Arms Company.—Rotating bolt; central, under-receiver magazine.

Remington.—Rotating bolt; Russell-Livermore side magazine.

Lee.—Straight-pull bolt; central, under-receiver magazine.

Miles.—Rotating bolt; central, under-receiver magazine.

The Remington gun is the gun described as Remington No. 1 in the board's report of October 22, 1894, having been improved and fitted with the Russell-Livermore side magazine, and submitted by Maj. W. R. Livermore, United States Engineers.

The record of proceedings and a list of correspondence, together with copies of orders, letters, and telegrams, sent and received by the board, are appended.

From a consideration of the arms submitted for test, with reference to the requirements of an ideal arm as laid down by the board at a previous session, the following defects are found to exist in the arms named:

LEE ARMS COMPANY.

This piece is, in its bolt action and magazine mechanism, practically the Mauser.

(1) Shearing of locking lugs would result in the bolt blowing out to the rear. There should be an additional support, not to be a bearing surface, but a stop for safety.

(2) The bolt and firing pin are locked by placing the latter at half cock. This is not considered the best system.

(3) Double loading from magazine is possible, due to the upper cartridge rim getting behind the one next below it.

(4) The method of stripping the clip into the magazine is very objectionable on account of the force required with tight clips.

(5) The method of seating the clip on the upper side of the bolt sleeve is objectionable, owing to the liability of the clip to fall into the receiver on being stripped.

(6) No indication is given of an empty magazine.

(7) A special tool is required for disassembling the bolt. (A device for obviating this is proposed by the Lee Arms Company.)

RUSSELL-LIVERMORE.

This gun is the Remington No. 1, tested at the board's meeting in October, 189[illegible] improved in certain particulars, as follows:

(1) Double loading is prevented by a device which prevents the complete withdrawal of the bolt unless it has been turned when pushed forward.

(2) The ejection has been improved by causing the empty case to be thrown more to the front.

(3) The cut-off has been removed.

The magazine system applied to this gun and submitted for test has the following defects:

(1) Being on the side, the magazine adds more weight to the gun than does a central magazine, besides detracting from the perfection of the balance of the piece.

(2) The position of the magazine necessitates an undue cutting away of the receiver.

(3) The clips are heavy and nonreversible.

LEE.

(1) There is no locking device on the firing pin, though the bolt is locked when closed.

(2) The lug on the firing pin for bringing the pin up in case of blow back is improperly placed and does not fulfill the purpose, the blow being taken on the lower end of the cocking piece, bending the firing pin.

(3) The trigger can be pulled before the bolt is completely closed.

(4) There is no indication of an empty magazine.

(5) The bolt is supported by a single lug some distance to the rear.

(6) Difficulty was experienced with the clips, as noted in the record, the failures becoming more frequent as the trial progressed. The trouble was claimed by the inventor to be due to the fact that the clips were made by hand and could not be relied on to work with certainty after the first time.

The board considered it desirable that the Lee gun should be given further tests in order to give a full trial to the system of clips, and to determine the life of the bolt, which is supported farther to the rear than has hitherto been thought desirable. The rimless ammunition used in the gun being exhausted, permission was asked from the Department to adjourn to await the manufacture of the necessary ammunition and new clips. The request was granted. The board adjourned on April 22, and reconvened on May 14, in pursuance to the Department's orders.

At the adjourned session the Miles gun was tested and the board submits the following report on it:

MILES.

This gun has been modified and materially improved since it was last submitted to the board, the objections recorded at that time having been largely overcome. The board finds it at present to have the following faults:

(1) The firing pin, in case of a blow back, brings up against the mainspring, which is liable to disable the piece.

(2) Double loading by forward movement may occur.

(3) Jamming of the feed mechanism is likely to occur if the rim of one cartridge falls behind that of the one next below.

(4) Ejection is not efficient, the empty cases having at times to be removed by hand.

(5) The recoil lugs of the bolt stood up well throughout the test, but they are not as symmetrically placed as would be desirable.

(6) The clip is objectionable, in that after stripping it must be removed by hand from its seat before the bolt can be closed. The clip, in common with all others of the same (Mauser) type, is open to the objection that, if fitted to the cartridges tightly enough to secure the rigidity of pack necessary for transportation, it strips with difficulty, and if made to fit more loosely the pack lacks rigidity and the cartridges are liable to jam in being pushed into the magazine. To this difficulty in stripping may be attributed almost entirely the lack of rapidity of fire.

The Lee gun was submitted, certain changes having been made to meet the objections raised by the board.

A firing-pin locking device had been added and the position of the lug on the firing pin had been changed.

The piece was then submitted to further trials to test thoroughly the clip system and the endurance of the bolt. Fifty-two new clips were supplied by the inventor, and 1,500 rounds were fired from the shoulder by the members of the board and seamen detailed for the purpose.

In several instances the clips failed to work perfectly, but the difficulty was in each case quickly overcome, and are believed to have been due to imperfect workmanship and to deterioration from continued use. The board considers this clip system to be better than any now in use, and that the clips themselves can, when made by machine, be depended on to work perfectly. They are the lightest clip in use, so far as the board knows, weighing only 85 grains each.

Notwithstanding the excessive pressures obtained from the ammunition used, the bolt worked easily, extraction failing only once in 2,500 rounds—the one failure being due to the excessively high pressure in the chamber having expanded the metal of the cartridge case into the cannelure.

The board considers that the successful performance of the gun throughout the tests for endurance is a sufficient guarantee of the strength and durability of the piece and the efficiency of the bolt action.

The gun is strong, simple, composed of few parts, and is susceptible of very rapid manipulation without great experience or aptitude on the part of the operator.

While there have been a number of guns tested by the board which would undoubtedly prove very efficient in service use, the Lee gun meets the important requirements laid down by the board as those for an ideal piece more nearly than any other arm, and its failure to equal the Luger gun in a few comparatively unimportant particulars is so far outweighed by its marked superiority in rapidity of fire and simplicity of parts that the board respectfully recommends its adoption for the naval service.

The board makes the following recommendations in regard to the various accessories and equipments:

ACCESSORIES.

Stock.—The butt stock to be of shotgun pattern, with half-pistol grip, and the fore stock and barrel cover to be excavated in wake of the barrel so as to be in contact with it only on annular ribs covered with asbestus.

Butt plate.—To be of aluminium, checked or roughened, and with a pocket for the reception of cleaning rags.

Bands.—To be of aluminium, if an efficient blackening method is found; otherwise to be of steel, but as light as is consistent with proper strength. An aluminium bronze, with 80 per cent aluminium, 12 per cent copper, and 8 per cent tin, may be used instead of pure aluminium.

Cleaning rod.—To be of wood or paper, with a steel core about 18 inches long and 0.2 inch diameter, and with plain ends. Cleaning to be done by pushing the oily rag or waste through, using two rods. If rods of so small diameter can not be obtained, or can not be sheathed with wood or paper, hollow rods of soft brass should be used.

Bayonet.—To be of knife pattern—blade, 8¼ inches long and 1$\frac{1}{16}$ inches wide; grasp, 4 inches long—and fitted to secure to the gun by a muzzle ring forming part of the guard and a spring catch going over a lug on the upper band.

Bayonet sheath.—To be of aluminium, provided an efficient means of blackening is found.

The weight of the bayonet and sheath should not exceed 14 ounces.

Sling.—To be of the pattern shown on the accompanying drawing.

Equipments:

Belt.—To be a woven belt with cross straps to put the weight on the shoulders, and worn high up above the waist, with provision for the attachment of ammunition boxes and bayonet sheath.

Ammunition boxes.—To hold eight clips, or forty cartridges, each; to be of light metal, paper, or wood pulp, with a spring-closing top and means for quickly attaching to the belt in at least four places on each side in front and on each side behind.

The cartridges in clips should be packed in these boxes at the factory, and the boxes are intended to be thrown away as emptied.

Canteen.—To be of aluminium, cloth covered, and hooked on the right side to straps hanging from the shoulder straps of the belt.

Haversack.—To be hooked to the belt on the left side.

Sights.—A front-sight cover is considered desirable if a light and efficient one can be devised. No muzzle cover should be used.

The board recommends that several patterns of sights be tested by actual firing under various conditions before deciding upon a system.

As far as practicable all metal parts of the equipments should be made of ligh aluminium bronze, to reduce weights as much as possible.

Respectfully,

GEORGE A. CONVERSE,
Commander, U. S. N., President.
PHILIP R. ALGER,
Professor, U. S. N., Member.
L. KARMANY,
First Lieutenant, U. S. M. C., Member.
N. C. TWINING,
Ensign, U. S. N., Member.

TESTS OF THE CUNNINGHAM ROCKET TORPEDO.

UNITED STATES NAVAL STATION,
Newport, R. I., December 17, 189-.

SIR: I have to report for the information of the Bureau of Ordnance, that a Cunningham rocket torpedo was fired in Coddington Cove on the 7th instant. The experiment was witnessed by members of the torpedo board and by the inventor and the trustee for the owners.

The torpedo had been somewhat modified since the board's report of August 14, 1893. The changes may be seen in Print No. 1. The weights as given by Mr. Cunningham were as follows:

	Pounds.
Weight of head	256
Weight of inner tubes and shell	733
Weight of rocket composition, 2 charges, 117 pounds each	234
Total weight of torpedo	1,223
Displacement	1,039
Negative buoyancy on firing	184
Buoyancy at end of run before filling	50

The head is now of three-fourths-inch cast iron, with the point screwed in. It is much bluffer than formerly. It was made for exercise only and is empty, the weight of charge being represented by the extra thickness of metal. The forward and middle charge sections only were loaded, the after section being empty. This arrangement was made, as stated by the trustee, to prevent broaching, it having been found that the torpedo, unless trimmed by the head, always came to the surface, notwithstanding the original negative buoyancy. An axial opening through the charges gave free communication through the torpedo abaft the head. A spring-loaded safety valve, set for a pressure of 100 pounds to the square inch was screwed into the after end. For igniting the charges four torpedo station igniters, wrapped with wisps of long-staple gun cotton and connected in parallel, had been placed in the torpedo, two in each charge compartment. The leading wires were taken through one of the after vent holes.

Print No. 2 shows the arrangement of the firing apparatus prepared according to the design of the inventor, except that the spar was one-third longer than proposed by him. The firing tube was of five-sixteenths-inch wrought iron, in two lengths, with a screw coupling. It was 19 feet long and weighed 1,150 pounds. The internal diameter was such as to allow a minimum clearance of one-eighth inch. One end is shown perforated, with 6 rows of 1¼-inch holes, 30 holes to the row. This end was intended for the head of the torpedo, the object being to permit the escape of gas from the forward charge. It was thought, however, by Mr. Cunningham, that this end of the tube had become slightly bent on the way from New Bedford, as the torpedo passed through it only with difficulty. At his request the torpedo was drawn out and reentered, tail first, from the unperforated end, and was discharged in that position. The bars and bands of the frame by which the tube was hung to the spar were of 2¼ by one-half inch flat iron.

The spar was moored by four mushrooms in 5 fathoms of water. In the launching position the axis of the torpedo was 8 feet below the surface. The line of fire was directed into the cove over a range shoaling gradually to 1 fathom in 1,200 feet. The bottom was black mud at the beginning of the course, changing to sand near the beach in from 1 to 2 fathoms of water. The range was marked with buoys at intervals of 400 feet.

This range was selected with a view to easy recovery, and to give an indication of the action of the torpedo in the vertical plane. Should it complete its run without *broaching* and without going to the bottom, the variation in depth would be within

the limits of draft obtaining in men-of-war. This arrangement was satisfactory to the owners and the inventor.

The torpedo was held in the tube until ready for firing by an iron pin passing through an eye in the end of the safety valve. This was drawn out before connecting the wires to the battery. On sending the current into the torpedo there was immediate response with characteristics of a low order of explosion. The shock was slight, but the whole spar was lifted a couple of feet from the water and then settled back, the front end seemingly more rapidly than the rear. The torpedo, as indicated by the escaping gas, seemed to leave the tube slowly. After a run of 200 feet, without developing great speed, it came to a rest, gas continuing to rise for some seconds.

Divers were sent down at once. They located the torpedo, but were unable to raise it until the next day, as it was found deeply embedded in the mud. A sounding over the torpedo gave 29 feet of water. It had plowed into the mud for three-fourths of its length and was inclined downward at an angle of about 15°. A straight course from the firing tube to the point of striking would have been inclined 6° below the horizontal. Under the torpedo, running nearly the whole length, was a large, flat stone, which may have been struck by the torpedo, but was then barely in contact at its front edge with the injured part of the shell, as described below.

A photograph is appended showing the appearance of the torpedo as recovered. The head shows no marks or scratches. The thin outer shell of No. 12, A. W. G. sheet steel, is torn irregularly all the way round and bent back for a distance varying from 1 to 2 feet abaft the head. It has the appearance of having been crushed from the outside, either previous to or in the act of tearing. The iron screw ring, to which the shell was riveted, in rear of the head shows a bending in or crushing of the rear edge in several places around the circumference. The brass safety valve was fused, nothing remaining except the heavy part of the casting that screwed into the base of the torpedo.

The firing tube is uninjured, and shows no internal marks that might not have been made by the rifling ribs on the passage of the torpedo through the tube both before and at the time of firing.

There are two suppositions to account for the injury to the shell of the torpedo. First. The torpedo on reaching the bottom may have struck on the rock, as referred to above, after the head had passed clear. If it was rotating rapidly and its advance practically stopped, the shell might have been torn and stripped and the screw ring dented as found. Second. The gas issuing from the forward orifices between the shell and solid tube may have crushed the shell and screw ring, leaving the front edge of the shell broken and projecting. The rush of gas would then have a tendency to strip back the thin metal, either while the torpedo was in the tube or just as it was leaving.

Of these suppositions the first seems inadmissible. If the body of the torpedo had struck the rock there would have been most probably a dent, or perhaps a break, running parallel to the rifling ribs. To account for the tear as it is the torpedo would have had to be practically stopped by the mud or the edge of the rock while continuing to rotate. One turn in 1 foot would have been required to make such a tear. This was an improbable occurrence. .

The second supposition therefore remains. In support of this were the apparent explosion when the charges were ignited and the slowness with which the torpedo gathered way. The appearance of the metal as stripped back seems to indicate a rapid rush of water or gas past the body of the torpedo, and not an encounter with a material object. Moreover, if the shell was stripped back as found, either in the tube or just outside, the rifling ribs would have had no effect, and the torpedo would have sunk slowly, both by its negative buoyancy and its trim by the head.

No conclusion can be drawn from the fact of the safety valve lifting. This probably occurred at the discharge, taking other evidence into consideration; but it may also have occurred when the torpedo buried its head in the mud, as by the choking of the forward orifices the pressure may have risen above the point for which the valve was set.

If the view as expressed above is correct it seems to be shown that there would be risk of accident in firing the torpedo from a submerged gun by its own motive power alone. In the two runs last year from the *Destroyer's* gun the forward charge was not ignited in either case.

The trustee for the owners has requested that the second of the two torpedoes recently received at this station be returned to New Bedford for certain modifications in the method of charging and priming. He also states that a cage is being constructed to replace the firing tube used in the last experiment. The second torpedo will be fired when these changes are completed.

Very respectfully, G. A. CONVERSE,
Commander, U. S. N., Inspector of Ordnance, Torpedo Station.

The COMMANDANT UNITED STATES NAVAL STATION,
Newport, R. I.

UNITED STATES NAVAL STATION,
Newport, R. I., June 29, 1895.

SIR: I have to report, for the information of the Bureau of Ordnance, the result of a trial of a Cunningham rocket torpedo in Coddington Cove on the 6th instant.

Referring to my report of December 17, 1894, the torpedo used was substantially similar to the one therein described. It was fused with two torpedo-station igniters connected in series, one in each charge section. Instead of the firing tube as described, an open cage was used, shown in the accompanying blue-print.*

The arrangements for firing and the locality were the same as in the last trial. On firing, the disturbance was slight, much less than on the last occasion. The spar was not moved perceptibly. The torpedo, judging from the escape of gas, moved very slowly from its position, and without gathering much way came to a rest about 100 feet from the starting point.

The position was immediately buoyed and divers sent down. They were unable to find any trace of the torpedo. They have searched and dragged over the whole locality a number of times, as their services could be spared, but without result. They could not even find a mark or score on the bottom. The character of the bottom is blue-black mud where the torpedo disappeared, changing to sand near what was intended as the end of the range. The divers will continue the search as occasion offers.

Various explanations have been suggested to account for the failure of the run. The shell leaked a little before it was put overboard, as shown when tested with air. To remedy this all the seams were well coated with Farmer's composition. Any small amount of water entering thereafter would not have reached the composition in the inner tube. The charge once ignited, water would not affect it. The failure could hardly have been caused by the ignition of only one charge. As the igniters were in series, both must have been fired. If for any reason one of them failed to ignite its charge, flame would have been communicated from the other through the central vent for the leading wires. The torpedo was well trimmed by the head, and this condition may have caused it to incline downward before it gathered speed enough to keep it level.

Very respectfully,

G. A. CONVERSE,
Commander, U. S. N., Inspector of Ordnance, Torpedo Station.

The COMMANDANT UNITED STATES NAVAL STATION,
Newport, R. I.

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* Not printed.

REPORT

OF THE

CHIEF OF THE BUREAU OF CONSTRUCTION AND REPAIR.

WASHINGTON, D. C., *October 1, 1895.*

SIR: In obedience to the Department's instructions I have the honor to submit herewith a report of the work done under the cognizance of this Bureau during the year ending June 30, 1895, and also submit estimates for appropriations required for the fiscal year ending June 30, 1897.

The estimates for the expenditures of the Bureau, as given in the following statement and marked A, are in accordance with existing laws.

The estimate marked B is for the general repair of vessels at navy-yards and on foreign stations, purchase of stores, materials, machinery, tools of all kinds, preservation of machinery and stores, and for the proper performance of all work of repair and maintenance under the cognizance of this Bureau.

The estimates marked B special are for continuance of work already authorized on the *Hartford* and steam tug for League Island Navy-Yard, the refitting of the *Chicago*, and the building of a steam tug for the naval station at Port Royal.

The estimates in the statement marked C are for the pay of such clerks and writers at the several navy-yards as are indispensable for the proper and systematic prosecution of the work.

The estimates marked D are for continuing the work on hulls and outfits of vessels in course of construction.

The estimate marked D special is to cover the cost of two composite sailing vessels of about 1,100 tons displacement, to be used as practice vessels at the United States Naval Academy.

ESTIMATES, APPROPRIATION CONSTRUCTION AND REPAIR, 1896-97.

Estimates of appropriations required for the fiscal year ending June 30, 1897, by the Bureau of Construction and Repair, Navy Department.

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1896.
A. Salaries.			
Chief clerk (appropriated)	$1,800.00		
One draftsman (appropriated)	1,800.00		
One assistant draftsman (appropriated)	1,400.00		
One assistant draftsman (appropriated)	1,200.00		
Two clerks of class 3, at $1,600 each (appropriated)	3,200.00		
One clerk of class 2 (appropriated)	1,400.00		
One clerk of class 1 (appropriated)	1,200.00		
One assistant messenger (appropriated)	720.00		
One laborer (appropriated)	660.00		
		$13,380.00	$13,380.00

Estimates of appropriations required for the fiscal year ending June 30, 1897, by the Bureau of Construction and Repair, Navy Department—Continued.

Detailed objects of expenditures and explanations.	Estimated amount required for each detailed object.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for current fiscal year ending June 30, 1896.
B. *Construction and repair of vessels.*			
For preservation and completion of vessels on the stocks and in ordinary; purchase of materials and stores of all kinds; steam steerers; pneumatic steerers; steam capstans, steam windlasses, and other steam auxiliaries; labor in navy-yards and on foreign stations; purchase of machinery and tools for use in shops; wear, tear, and repair of vessels afloat; general care, increase, and protection of the Navy in the line of construction and repair; incidental expenses, such as advertising, freight, foreign postage, telegrams, telephone service, photographing, books, professional magazines, plans, stationery, and instruments for drafting room (appropriated March 2, 1895)	$1,500,000.00	$1,500,000.00	$900,000.00
B. *Special.*			
For completion of repairs to the U. S. S. Hartford (appropriated, act July 26, 1894, $150,000)	170,000.00	170,000.00	.....
For completion of Steam Tug No. 5 for navy-yard, League Island, Pa., appropriated act March 2, 1895)	8,000.00	8,000.00	25,000.00
For repairs to the U. S. S. Chicago (submitted)	300,000.00	300,000.00	.....
For the construction of one steam tug for the use of the naval station, Port Royal, S. C. (submitted)	50,000.00	50,000.00	.....
C. *Civil establishment.*			
At navy-yard, Portsmouth, N. H.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Brooklyn, N. Y.:			
One clerk to naval constructor (appropriated)	1,400.00		
Three writers, at $1,017.25 each (appropriated)	3,051.75		
At navy-yard, Boston, Mass.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, League Island, Pa.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Washington, D. C.:			
One clerk to naval constructor (appropriated)	1,400.00		
At navy-yard, Norfolk, Va.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
At navy-yard, Pensacola, Fla.:			
One writer (appropriated)	1,017.25		
At navy-yard, Mare Island, Cal.:			
One clerk to naval constructor (appropriated)	1,400.00		
Two writers, at $1,017.25 each (appropriated)	2,034.50		
		19,972.50	19,972.50
D. *Increase of the Navy—Construction and machinery.*			
On account of hulls and outfits of vessels and steam machinery of vessels heretofore authorized (See joint letter below.)	.....	5,895,679.00	.....
D. *Special.*			
For two composite sailing vessels of 1,100 tons displacement; estimated cost, including outfit, each (submitted)	250,000.00	500,000.00	.....

BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, August 21, 1895.

SIR: We have the honor to submit herewith, in duplicate, joint estimates (inclosures Nos. 1 and 2) of the amounts required by the Bureaus of Construction and Repair and Steam Engineering, under appropriation "Increase of the Navy, construction and machinery," for work on new vessels authorized by Congress, to June 30, 1897, as per statement in detail herewith (marked inclosures Nos. 3 and 4), viz:

Sheet D.

Under Bureau of Construction and Repair:		
For fiscal year 1895–96	$4,576,193	
For fiscal year 1896–97	3,988,659	
Total		$8,564,852
Under Bureau of Steam Engineering:		
For fiscal year 1895–96	2,704,580	
For fiscal year 1896–97	1,938,380	
Total		4,642,960
Aggregate		13,207,812
Balance in Treasury July 1, available for above		7,312,133
Appropriation required for fiscal year 1896–97		5,895,679

This amount, $5,895,679, is the estimated sum required to be appropriated for work on new vessels authorized by Congress, for "increase of the Navy, construction, and machinery," for the fiscal year ending June 30, 1897.

We are, sir, very respectfully,

PHILIP HICHBORN,
Chief Constructor, U. S. N.,
Chief of Bureau of Construction and Repair.

GEO. W. MELVILLE,
Engineer-in-Chief, U. S. N.,
Chief of Bureau of Steam Engineering.

The SECRETARY OF THE NAVY.

In submitting the above estimates the Bureau desires specially to mphasize the necessity for an adequate appropriation under "construction and repair," this item being marked B in the above list. This ppropriation is the only money available for preservation and repair of essels in commission, fitting out and in ordinary, the supply and preservation of auxiliary machinery and equipment in general, the maintenance of yard plants, and numerous other items not chargeable to any her appropriation. The demands upon it for the ordinary repairs of ips, their general care and preservation, the maintenance of their uipage and outfit in a proper state of efficiency are yearly becoming ore serious, due not only to an increase in the number of vessels in mmission, but also to the fact that those vessels which have been commission for several years require a larger expenditure for their aintenance than was necessary when first fitted out.

Modern steel ships, with their extreme subdivision and elaborate systems of ventilation, drainage, and mechanical auxiliaries of all kinds, quire much greater care, both when in commission and in ordinary, an was formerly the case with the old wooden ships; neglect is folwed by much more serious and far-reaching deterioration, and it is solutely essential that the most careful supervision should be exersed at all times and remedies promptly applied in order that the effiency of the vessels as men-of-war may be properly maintained.

From the close of the war until 1883, the date of the authorization the first steel cruisers of the United States Navy, the appropriation r "construction and repair" was never less than $1,500,000, and was ery often much more than that sum. In 1883, however, provision was ade that no repairs should be made upon a wooden vessel when the timated cost of such repairs would exceed 20 per cent of the estiated cost of a new ship of the same size and like material. In conse-

quence of this provision the old wooden ships were gradually surveyed and condemned as unfit for further service, and the necessity for expenditures for repairs and maintenance under appropriation "construction and repair" became less and the appropriation was correspondingly reduced, so that from 1885 until the present time it has never exceeded $1,000,000.

It is now more than nine years since the first vessel of the new navy was put in commission, and the necessity for general repairs and renewals of fittings and equipments is becoming more and more pressing.

In 1885 there were in commission or fitting out at navy-yards 32 wooden vessels of a displacement of 66,000 tons and 7 iron ships of 6,900 tons, making a total of 39 ships, with a displacement of 72,900 tons. On July 1, 1895, there were in commission or fitting out 11 wooden vessels of 18,300 tons displacement, and 32 steel or iron vessels of 104,500 tons displacement, or a grand total of 43 vessels of 122,800 tons displacement. The above figures are exclusive of torpedo boats, tugs, and receiving ships.

We thus see that the total displacement of vessels in commission or fitting out at the present time is nearly double what it was in 1885, while the substitution of steel for wood as the material for the hulls of ships and the enormous increase in the quantity and variety of auxiliary machinery and fittings of all kinds render the cost of maintenance per ton displacement greater than was formerly the case with wooden ships; and yet the appropriation for the current year is $100,000 less than it was ten years ago.

That the Bureau has been able to make such small appropriations meet the necessities of the service for several years past is due largely to the fact that the new steel vessels which form 85 per cent of the displacement of our present fleet, have been for the most part recently fitted out and the charges for deterioration and general wear and tear have been small.

In addition to the care and preservation of ships, the appropriation for "construction and repair" is answerable for all charges under general maintenance of machine tools and construction and repair plants at navy-yards, as well as miscellaneous charges at navy-yards and the Navy Department. For several years past the Bureau has been able to use only a small portion of the appropriation for construction and repair for this purpose, and the continuance of such a dangerously economical practice will undoubtedly impair the efficiency of the navy-yard plants as a whole and ultimately cause the Government great additional expense in renewals which might have been avoided by moderate expenditures at the proper time.

From the above it is very evident that the policy of extreme economy has about reached its limit, and unless more ample appropriations are made under "construction and repair" for the care and preservation of ships and the general maintenance of the yard plants the efficiency of the fleet will be diminished and Government property will suffer serious deterioration.

In conclusion, the attention of the Department is invited to the fact that the actual expenditure for maintenance and care and preservation of ships in matters under cognizance of the Bureau of Construction and Repairs was, during the past year, less than 3 per cent of the original cost of the hull and fittings of the vessels fitting out and in commission, whereas in the British navy estimates for this and previous years, the allowance for depreciation of material, and appropriations to cover cost of replacing same vary from 4 to 9 per cent of the first cost of the

essels, this percentage depending upon the type of vessel, being 9 per ent for small vessels, torpedo boats, and launches and 4 per cent for rmored vessels.

Table I below gives under the various titles the items of expendi- ire of the appropriation "Construction and repair" for the past year, nd Table II shows the total appropriations under "Construction and epair" for the past twenty years.

An inspection of Table I shows very clearly the numerous charges hich fall under the appropriation "Construction and repair," while able II shows the gradual decrease of the appropriation from $3,300,000 1 1875 to $900,000 in 1895.

TABLE I.

xpenditures under appropriation "construction and repair, 1895," during fiscal year ended June 30, 1895.

itle A. Cost and valuation, including every expenditure directly chargeable to ship during construction, and for making good deteriorations determined by survey:		
Labor		$86.56
itle D. Repairs to such integral parts of ship as were originally charged to Title A, and expenditures for additions, improvements, and alterations in original construction:		
Labor	$330,588.55	
Money vouchers	960.17	
Repairs abroad	27,025.30	
Docking abroad	6,101.00	
		364,675.02
itle E. Real estate and chattels, including ship houses, machine shops, derricks, shears, cranes, scows, pile drivers, and tugs not borne upon the Navy Register; tenders, launches, lighters, boats, etc., not belonging to a receiving or other ship, but pertaining to the station proper:		
Labor		295.04
itle F. Machinery plant, including engines, boilers, shafting and machine tools:		
Labor		10,028.14
itle G. General maintenance, including cost of repairs to all property under Titles E and F:		
Labor		148,296.46
Money vouchers		1,334.20
itle N. Models and experiments:		
Labor		555.32
itle V. Miscellaneous, including wages on account of legal holidays, and expenses of advertising, telegraphing, printing, photographing, etc.:		
Labor	$32,135.42	
Money vouchers	4,145.16	
Freight and incidentals abroad	4,539.00	
		40,819.58
itle W. Deterioration and waste—not chargeable to preceding titles:		
Money vouchers		78.00
itle X. Supplies in store:		
From contract and open purchase	$177,024.74	
From naval supply fund	35,111.40	
		212,136.14
itle Y. Supplies afloat:		
Purchases abroad		24,239.54
itle Z. Conversion accounts, embracing all articles manufactured by the Government for the Naval Establishment and delivered to general storekeeper for issue:		
Labor		67,565.29
Balance in Treasury (obligated for claims outstanding)		29,890.71
Appropriated		900,000.00

TABLE II.

Appropriation "construction and repair."

For fiscal year 1875:	
Appropriation	$3,300,000.00
Expended	3,297,708.97
For fiscal year 1876:	
Appropriation and several credits	3,550,000.00
Expended	3,543,818.76
For fiscal year 1877:	
Appropriation and several credits	2,108,039.54
Expended	2,108,037.13
For fiscal year 1878.	
Appropriation	1,750,000.00
Expended	1,744,680.86
For fiscal year 1879:	
Appropriation	1,500,000.00
Expended	1,498,553.73
For fiscal year 1880:	
Appropriation	1,500,000.00
Expended	1,485,996.26
For fiscal year 1881:	
Appropriation and credit	1,575,000.00
Expended	1,565,117.08
For fiscal year 1882:	
Appropriation and credits	1,586,018.00
Expended	1,586,017.22
For fiscal year 1883:	
Appropriation	1,750,000.00
Expended	1,709,837.39
For fiscal year 1884:	
Appropriation and deficiency and credit	1,348,802.02
Expended	1,344,655.46
For fiscal year 1885:	
Appropriation	1,000,000.00
Expended	1,000,000.00
For fiscal year 1886:	
Appropriation	1,000,000.00
Expended	999,996.86
For fiscal year 1887:	
Appropriation and credit	913,799.45
Expended	911,319.71
For fiscal year 1888:	
Appropriation and credit	943,691.25
Expended	912,120.91
For fiscal year 1889:	
Appropriations (2)	975,000.00
Expended	968,207.89
For fiscal year 1890:	
Appropriation and credit	869,214.83
Expended	851,981.32
For fiscal year 1890:	
Deficiency appropriation (April 4, 1890)	50,000.00
Expended	50,000.00
For fiscal year 1891:	
Appropriation	1,000,000.00
Expended	981,472.98
For fiscal year 1892:	
Appropriation	1,000,000.00
Expended	993,869.68
For fiscal year 1893:	
Appropriation and credit	987,796.03
Expended	974,686.07
For fiscal year 1894:	
Appropriation	950,000.00
Expended	944,667.66
For fiscal year 1895:	
Appropriation	900,000.00
Expended and obligated	900,000.00

REFITTING THE CHICAGO.

The item of $300,000 asked for in the above estimates under the appropriation B special is in conformity with the estimate submitted by a board of survey whose recommendations were, in general, approved by the commandant of the New York Navy-Yard. A great part of the expense of refitting the *Chicago* is due to the tearing out of decks and general changes in hull necessitated by the installation of entirely new propelling machinery. The other items included in the estimates of the board of survey are such as would be naturally expected from the ordinary wear and tear in a vessel which had been continuously in service for over eight years.

The following extracts from the report of the board of survey show the items of largest expenditure, with a brief statement of their necessity.

DECKS.

Spar deck.—The spar deck planking is very badly worn and it will be necessary to renew it throughout, except under 8-inch guns. We recommend that the new planking be made 4 inches square. It will be necessary to remove joiner work in cabins in order to get at deck bolts.

Gun deck.—The gun deck forward of cabins is badly worn and should be renewed. That portion abaft cabins under 5-inch gun tracks (which are to be removed) will require renewing as the tracks are let into deck. A portion of joiner work in wardroom and junior officers' quarters will require removal.

Berth deck.—This deck must be renewed in places where badly worn and in others where removal of old machinery makes it necessary to take out the deck.

Estimated cost for all deck planking, including calking, fastening, etc., is—

For labor	$25,500
For material	8,500
Total	34,000

JOINER WORK.

Estimated cost to replace cabin and wardroom joiner work and to make repairs to other parts, and new set of ladders, is—

For labor	$15,000
For material	1,500
Total	16,500

DRAINAGE AND FLUSHING SYSTEM, FIRE MAINS, ETC.

The pipes, valves, cisterns, etc., throughout the ship are in a very bad condition, and an entirely new and modern system should be put in and hand pumps repaired. Estimated cost—

For labor	$23,000
For material	21,000
Total	44,000

The estimated cost for the foregoing work seems large, but past experience has shown these fittings to be among the most expensive of any on a modern ship of war,

VENTILATING SYSTEM.

The ventilating system throughout requires overhauling, especially the valves. New system to be supplied to machinery spaces and to steering engine room. The present blowers are of an obsolete pattern and worn out. Only an approximate estimate of cost can be made, as there are no available detail plans of machinery. Estimated cost—

For labor	$4,500
For material	5,200
Total	9,700

Material includes two new blowers.

ELECTRIC LIGHTING.

As the decks and cabin joiner work must be removed, much of the capping and wiring must also be removed and a very large number of holes drilled in various places. Estimated cost—

For labor	$9,000
For material	600
Total	9,600

WATER-TIGHT DOORS AND HATCHES.

Water-tight doors and hatches require a general overhauling, many new fittings, and all new gaskets. Estimated cost for this work is—

For labor	$3,500
For material	550
Total	4,050

ENGINE AND BOILER SEATINGS.

For new machinery—

For labor	$15,500
For material	4,000
Total	19,500

CLEANING AND SCALING.

The interior of the vessel where the slightest corrosion is visible should be thoroughly scaled, and considerable of the exterior where the cement has been worn off must be scraped. Estimated cost, including necessary amount for cleaning ship of dirt, snow, and water while under repairs, is—

For labor	$9,600
For material	300
Total	9,900

PAINTING AND VARNISHING.

The ship will require repainting throughout with not less, in any place, than two coats, in many places three coats, and in some places, where new work is fitted, four coats. it will probably be necessary to paint the ship's bottom at least three times, and this is provided for in the estimate. Estimated cost—

For labor	$27,000
For material	9,000
Total	36,000

BOATS.

Repairs to old boats and building new boats to replace the third and forth cutters, barge, gig, dinghy, and wherry. Estimated cost—

For labor	$6,900
For material	1,690
Total	8,590

The other items of expense include general repairs and renewal of minor fittings of hull, including changes in hatches, repairs to water closets, bathrooms, seamen's head, etc., ash chutes, scupper pipes, manholes throughout ship, sea valves, voice tubes, boat davits, air ports and deck lights, furniture, additional gun supports, steam winches and windlass, steering gear, cement, spars, blocks, and general charges for docking, besides numerous other items, making the total estimated cost for miscellaneous items—

For labor	$52,005
For material	11,955
Total	63,960

And a grand total for repairs and general refitting of—

For labor	$191,505
For material	64,295
Total	255,800

In addition to the above, the board of survey recommended that the following changes be made in the *Chicago* as materially increasing the fighting efficiency of the ship:

(1) That the present forward 6-inch and 47-mm. gun sponsons be removed. Also port sills and port shutters of 6-inch gun ports, and that new and suitable sponsons for all 5-inch R. F. guns be built. There is insufficient room, owing to interference of 8-inch gun sponsons and boat davits, to build a sponson forward of that now used for 47-mm. guns as recommended by the Bureau of Ordnance and referred to in letter from Bureau of Construction and Repair No. 4288.

The Board recommends that the two forward staterooms on gun deck be removed to give room for working No. 6 starboard and port 5-inch R. F. guns. If absolutely necessary to have these two rooms, they can be placed forward of No. 6 guns. The foregoing recommendations are made for the reason that with the present ports a train of only about 18° to 20° can be obtained, which the Board considers entirely inadequate for 5-inch R. F. guns in broadside.

(2) That the dynamos be placed on the forward orlop, and that the orlop deck plating, which now only covers magazines and shell rooms, be extended to ship's side and made water-tight.

(3) That the rig be changed to that of a three-masted schooner, with pole masts and fighting tops. It will be observed that the funnels have been increased in height about 10 feet and the fighting tops kept quite low in order to avoid the smoke. It is recommended that the present lower masts be cut off at or near the futtock bands, where they commence to change their section from circular to rectangular, and extended to a total length, for fore and main, of 110 feet above load water line, the poles to be of wood 8 feet long. The old circular fighting tops on fore and main masts can be utilized.

(4) That suitable ammunition hoists be provided for serving 5-inch R. F. guns, the location of these proposed hoists to be as shown on plan.

Total estimated cost of above changes:

For labor.....
For material.....

Total.....

Grand total of changes and cost of refitting *Chicago:*

For labor.....
For material.....

Total.....

Progress of work on vessels in course of construction or complet

Since June 30, 1894, the following contract-built vessels hav completed and formally accepted by the Government:

Name of vessel.	Where and by whom built.	I ac
Marblehead	Harrison Loring, Boston, Mass	Jul
Columbia	William Cramp & Sons, Philadelphia, Pa	Se
Olympia	Union Iron Works, San Francisco, Cal	Fe
Minneapolis	William Cramp & Sons, Philadelphia, Pa	Ju

The *Maine*, *Texas*, and *Amphitrite*, which were built or compl navy-yards, have also been put in commission, but the *Texas* h yet had the final acceptance trial of its machinery, which was b contract.

The torpedo boat *Ericsson* started out on an official speed t November, 1894, but, after several breakdowns, the trial wa poned and has not since been resumed officially, although sever vate trials have been undertaken.

The contractors for the *Katahdin* and *Indiana* have notifi Department that those vessels will be ready for trial during the of October; their completion may therefore be expected at a date.

The contract for torpedo boats 3, 4, and 5, which were descri last year's report, was on May 3, 1895, awarded to the Columbia Works and Dry Dock Company, of Baltimore, Md., at their $97,500 for each boat, they being the lowest bidders. Working are now being prepared at the works of the contractors and the m of construction has been ordered.

Vessels surveyed and repaired.

The following vessels have been surveyed and repairs ordered the fiscal year 1894–95:

Name of vessel.	Place.	Date of sur
Alliance	Norfolk, Va	June 20 to July
San Francisco	New York, N. Y	July 18, 1894.
Marion	Mare Island, Cal	June 18 to 23, 1
New York	New York, N. Y	Sept. 6, 1894.
Bennington	Mare Island, Cal	Sept. 1 to 6, 189
Philadelphia	do	Sept. 5 to 11, 18
Atlanta	Norfolk, Va	Sept. 22, 1894.
Yorktown	Mare Island, Cal	Sept. 25, 1894.
Alert	do	Oct. 12 to 16, 18
Ranger	do	Oct. 17 to 19, 18
Mohican	do	Oct. 26 to 30, 18
Adams	do	Oct. 23 to 27, 18
Marblehead	Norfolk, Va	Dec. 19, 1894.
Columbia	do	Jan. 16, 1895.
Minneapolis	do	June 11, 1895.
Essex	Port Royal, S. C	Apr. 30, 1895.

Vessels repaired at the different navy-yards during the year ending June 30, 1895.

Lancaster.	Yorktown.	Thetis.	Cincinnati.
Raleigh.	Dolphin.	Marion.	Columbia.
Amphitrite.	Fern.	Alliance.	Minneapolis.
Essex.	Wahneta (tug).	Charleston.	Puritan.
Atlanta.	Vesuvius.	San Francisco.	Olympia.
Monadnock.	Terror.	New York.	Monterey.
Nina.	Bennington.	Philadelphia.	Chicago.
Bancroft.	Detroit.	Narkeeta.	Standish (tug).
Alert.	Ranger.	Miantonomoh.	Cushing.
Marblehead.	Castine.	Adams.	Hartford.
Vermont.	Machias.	Mohican.	
Montgomery.	Boston.	Wyandotte.	

Launches.

The only launch which has taken place since submitting my last report was that of the steam tug *Unadilla*, which was successfully launched at the Mare Island Navy-Yard September 21, 1895.

Naval Militia.

During the past year vessels and ship's boats have been lent to the Naval Militia as follows:

Name of ship.	State to which lent.	Date of order authorizing transfer.
St. Louis	Pennsylvania	Oct. 20, 1894.
Dale	Maryland	Dec. 5, 1894.
Portsmouth	New Jersey	May 6, 1895.
Wyandotte	Connecticut	May 7, 1895.
Minnesota	Massachusetts	Sept. 20, 1895.

Before transfer the above vessels were stripped of stores, but were provided with an outfit of furniture, etc., all of which was invoiced and receipted for.

Ship's boats fitted out and transferred to State naval militia.

Name of State.	Number and type of boats.	Date of order authorizing transfer.
New York:		
Rochester division	3 whaleboats	Oct. 8, 1894.
Michigan	3 cutters	Sept. 21, 1894.
Saginaw division	2 cutters	Apr. 9, 1895.
Massachusetts	2 launches	May 7, 1895.
Boats of Wabash lent temporarily	4 cutters	
Rhode Island	2 whaleboats	June 29, 1895.

The above boats were supplied with the usual outfit, which was duly invoiced and receipted for.

The expense of making the necessary repairs to above vessels and boats and their outfit before transferring them to the various State authorities was a charge on the ordinary appropriation for construction and repair, there being no other fund available for this purpose. Although the total expenditures in this direction were not very great, it emphasizes the necessity for a more liberal appropriation under construction and repair, as this fund has to bear expenditures of every kind which are not specific charges on some other appropriation.

Monitors.

The Department having decided to transfer the monitors *Ajax*, *Canonicus*, *Catskill*, *Lehigh*, *Mahopac*, and *Manhattan* from their anchorage in James River to the League Island Navy-Yard, these vessels were

towed to the Norfolk Navy-Yard to be put in condition for the voyage to Philadelphia. While at Norfolk they were docked and cleaned and their bottoms were given three coats of paint, as follows: First coat, red lead; second coat, two-thirds red lead, one-third white zinc; third coat, white zinc.

A careful examination of the vessels' under-water plating showed that nearly all of the paint had worn off and numerous rust cones had been formed, the pitting in many places being quite deep. The heavy scantlings and small dimensions of these vessels, however, rendered this pitting less serious than it would otherwise have been, so that there was no danger in sending them to Philadelphia in their present condition after fitting temporary covers to the hatches and making some other minor repairs.

New construction.

Submarine torpedo boat.—An act making appropriation for the naval service for the fiscal year ending June 30, 1894, which act was approved March 3, 1893, authorized the building of a submarine torpedo boat and the conducting of experiments therewith.

In compliance with the terms of the act proposals were invited, and after careful consideration of the various designs submitted, a contract was entered into with the John P. Holland Torpedo Boat Company on March 13, 1895, for the construction of a submarine torpedo boat in accordance with outline plans submitted by the said John P. Holland Torpedo Boat Company, the contract price being $150,000.

In specifying the conditions under which this submarine torpedo boat was to be built great latitude was given the contractor in developing and changing his original plans, but the following schedule of requirements, which was made a part of the contract, fully protects the Government's interests and if fulfilled will insure to the Navy Department a substantial addition to its fighting strength:

SCHEDULE OF REQUIREMENTS ACCOMPANYING CONTRACT FOR HOLLAND SUBMARINE TORPEDO BOAT.

Approximate dimensions, etc.

Length	feet	80
Diameter	do	11
Displacement, light	tons	118.5
Displacement, with superstructure awash	do	137.84
Total displacement when submerged	do	138.5
Reserve buoyancy, submerged or awash	do	.66
Reserve buoyancy when lying still, submerged	pounds	375

Motive power when running light or awash.

Twin screws operated by triple-expansion steam engines capable of developing power sufficient to propel the vessel at the following speeds:

Fifteen knots when the vessel is in the light condition.

Fourteen knots when the vessel is in the awash condition, with a minimum endurance of twelve hours at this speed.

Motive power when submerged.

There shall be a battery of storage cells capable of supplying an electric current which will develop through the necessary motor and connections power sufficient to propel the vessel, when completely submerged, at a speed of 8 knots, with a minimum endurance of six hours at this speed.

The steam power, electric dynamo, and storage cells shall be so connected as to be readily reversible in their action, thus rendering it possible to recharge the cells from the dynamo, the steam engine being used as a prime motor. The electric power may

also be connected directly to a propeller shaft placed in the axis of the boat, in addition to the connection with the main propeller shafts. The electric motor may thus operate a special propeller, in addition to driving the main shafts independently of the steam engines.

The capacity of the electric storage cells shall be amply large to prevent injury or deterioration while giving off the power required to propel the vessel at a speed of 8 knots for six hours.

Armament.

Five automobile torpedoes and two expulsion tubes with the necessary air plant, all to be supplied by the Government, but to be installed by the contractor, with the necessary fittings upon plans approved by the Government.

Only the main expulsion tubes will be supplied by the Government, that portion of the tubes built into the hull of the vessel being furnished by the contractor, as well as all fittings for closing the ports. The contractor will also supply machinery for running out and in the impulse tubes, should such machinery be found necessary.

Protection.

1. Ability to reach a depth of 20 feet below the surface of the water within one minute after the order is given to dive, the boat at the time floating light and running full speed ahead, the smokestack being raised to its full height.
2. The power to dive to a depth of 20 feet within 30 seconds, the boat before diving running at full speed with steam power and having 3 feet of water over the hull, smokestack being erect as required in previous paragraph.
3. Complete submergence with 3 feet of water over the turret, the pilot obtaining a view over the water by means of a camera lucida in a tube that projects above the surface.
4. An armor turret rising to a total height of 4 feet above the hull, the pilot's head being protected by an armor cylinder of 8 inches thickness, or of such thickness as the Department may hereafter determine.
5. Complete double shell extending about three-fourths of the vessel's length aft from the stem, except where interrupted by the turret and companionways, the space between being chiefly occupied by fuel bunkers and water-ballast tanks.

General requirements, in addition to the foregoing, guaranteed by the contractor, to be fulfilled under such tests as the Department may prescribe:

1. Sufficient structural strength, with a reasonable factor of safety, in order to withstand hydrostatic pressure at a depth of immersion of 75 feet.
2. Ample stability in both the surface and submerged conditions.
3. Automatic arrangements for preventing submergence beyond a predetermined depth.
4. Automatic compensation for stores or ammunition consumed, and independent mechanism for quickly correcting any variations in trim due to shifting of weights or other causes.
5. Efficient mechanical means for steering a fixed course.
6. Ample provision for the supply of pure air to the crew, this to be accomplished chemically, or by means of air stored under pressure in tanks.
7. Efficient apparatus, independent of air pumps or air pressure, for checking submergence and causing vessel to rise rapidly to the surface.
8. Ability to maintain an approximately fixed position, also a definite depth of submergence without undue expenditure of power.
9. Provision for escape of crew in the event of serious damage to hull or derangement of machinery.

The general plans and specifications heretofore submitted by the John P. Holland Torpedo Boat Company shall be annexed to the contract and made a part of the same, the contractors, however, having the right to make such changes in the details as may seem necessary, subject of course to the general approval of the Department; it being distinctly understood, however, that such approval does not carry with it any responsibility for the proposed changes, such responsibility resting solely and entirely with the contractor.

That part of the specifications submitted by the contractor and relating to the thickness of plating and size of frame shall be so amended that the outside plating shall be one-half inch in thickness, tapering to three-eighths inch at the extreme ends of the vessel, and increasing the size of the frames from 3 by 3 by $\frac{3}{8}$ to $3\frac{1}{2}$ by $3\frac{1}{2}$ by 12 pounds.

Before commencing the actual work of construction, there shall be prepared for the approval of the Department, complete specifications and general plans of the hull and machinery, together with detailed calculations of weights, stability, etc., and, as the work progresses, plans shall be prepared and submitted to the Department for its approval, showing in fullest detail all interior arrangements, machinery, fittings, and devices of all kinds.

All material shall be of the best quality, of domestic manufacture, and subject to test. All steel used in the construction of hull, machinery, and fittings will be subject to the tests prescribed by the Secretary of the Navy for steel to be used in the construction of torpedo boats Nos. 3, 4, and 5.

The workmanship shall be of the highest class and subject to the usual inspection provided for vessels built for the Government. The inspectors designated for this duty shall be provided with suitable office room and all conveniences for carrying out their duties, and shall have free access to the works of the builders at all times for the purpose of witnessing and examining the progress of work on the vessel, machinery, fittings, and appurtenances of all kinds. This contract shall be held to cover, in every particular, the construction of hull, machinery, fittings of all kinds, torpedo outfit (exclusive of torpedoes, air plant for same, and expulsion tubes), and complete detail drawings and calculations for same.

Upon the completion of the vessel a test shall be made showing its capability of making submerged runs for a distance of 2 miles, at the end of which a torpedo shall be discharged and strike a target 150 feet long and 16 feet deep, the upper edge being awash and placed at right angles to the course. During these submerged runs the vessel shall not come to the surface more than three times from the time of starting until the discharge of the torpedo, the duration of each appearance not to exceed one minute.

This, and such other tests as may be required by the Department in order to fully demonstrate the successful operation of the vessel and all its appurtenances and the fulfillment of the specified guaranties, shall be made by and at the expense of the contractor, under the supervision of a board appointed by the Secretary of the Navy.

In lieu of premiums and penalties the following speed allowances shall be made within which the Department may accept the vessel at a reduced valuation, to be determined by a board appointed by the Department:

For the light condition the speed shall not fall below 13½ knots.
For the awash condition the speed shall not fall below 12½ knots.
For the submerged condition the speed shall not fall below 6½ knots.

The John P. Holland Torpedo Boat Company have made a contract with the Columbian Iron Works and Dry Dock Company, of Baltimore, Md., for the construction of hull and machinery of the above vessel, and general working plans are now being prepared, the general dimensions being as follows: Length between perpendiculars, 84 feet; diameter, 11.5 feet; displacement when submerged, 168 tons.

Torpedo boats Nos. 6, 7, and 8.

In the act making appropriations for the naval service for the fiscal year ending June 30, 1895, approved March 2, 1895, provision was made under "Increase of the Navy" for three torpedo boats, to cost not exceeding $175,000; one of the said torpedo boats to be built on or near the coast of the Pacific Ocean, or in the waters connecting therewith, and one torpedo boat on the Mississippi River, and one torpedo boat on the Gulf of Mexico: *Provided*, That if it shall appear from the bids received that either of said torpedo boats can not be built at a fair cost at the places fixed therefor in the proposal, the same may be built elsewhere in the United States. The boats are to be built under the provisions of the act of August 3, 1886, entitled "An act to increase the Naval Establishment," as to materials for said boats, their engines, boilers, and machinery, save that in all their parts said boats shall be of domestic manufacture. The contracts under which the boats are to be built are to be in accordance with said act, except that no premiums are to be offered. It is further stipulated in the act of March 2, 1895, above referred to, that the boats may be constructed of steel or other metal, or of alloy.

The Department, in advertising for these boats to be built by contract, invited proposals under two classes, viz:

Class 1.—For the construction of the hull and machinery, including engines, boilers and appurtenances, and equipment, complete in all respects, in accordance with plans and specifications provided by the Secretary of the Navy.

Class 2.—For the construction of the hull and machinery, including engines, boilers and appurtenances, and equipment, complete in all respects, in accordance with plans and specifications provided by the bidder.

The following elements and qualities were set forth in the circular defining the chief characteristics:

The average speed to be maintained for two consecutive hours, under conditions to be prescribed by the Secretary of the Navy, must not be less than 26 knots per hour.

The boats are to be built and fitted complete for sea by the contractors, with the exception of the ordnance and ordnance outfit of all kinds, and sea stores; that is, the contractors furnish small boats, furniture of all kinds, electric plant, anchors, cables, rigging, awnings, ridge ropes, hatch hoods, galleys and furniture for galleys, of all kinds. Two conning towers will be placed on each boat, one about 35 feet from each end.

The spaces allowed for torpedo tubes, the torpedoes and appurtenances, and rapid-firing guns are to be shown on the plans of designs submitted.

Accommodations must be provided on each boat for 4 commissioned officers, 4 machinists, and 16 men.

An incandescent electric-lighting plant must be fitted, but no search light will be required.

The boats on trial trips for speed must carry the following weights, or the equivalent, in addition to the weight of the completed hull, machinery, and spare parts:

Torpedo gear and torpedoes	tons	4.72
Rapid-firing guns and ammunition	do	1.60
Coal	do	12
Crew, boats, anchors, electric plant, equipment, etc	do	9
Total	do	27.32

The coal capacity must be at least 60 tons of 43 cubic feet per ton.

Any and all designs for these boats submitted must be accompanied with complete plans and specifications for building, and calculations of weight, displacement, and range of stability under the conditions of trial and deep-load displacement; also calculations showing trim and range of stability when the several water-tight compartments are flooded; also such calculations as will demonstrate the satisfactory strength of the whole structure.

The specifications submitted by the bidders under Class 2 must cover fully the ground covered by the Department's specifications. Copies of the Department's specifications will be furnished, in which bidders must show by erasures and additions the exact nature of the hull and machinery, including engines, boilers, and equipment, complete in all respects, that they propose to build.

The design of the machinery submitted must fulfill the general requirements to be issued by the Bureau of Steam Engineering. Such design must be accompanied by drawings and specifications in sufficient detail to enable the strength of the principal parts and the probable efficiency of the whole design to be readily determined. Further, all designs must be accompanied by detailed calculations for the weight and position of center of gravity of all machinery, the former not to exceed the weight assigned in this circular, if it is proposed to adopt the Department's design of hull.

The general dimensions and weights of the Department's design are as follows:

Length on load line	feet	170
Beam on load line	do	17
Draft, mean, normal	do	5.5
Displacement, normal, about	tons	180
I. H. P., about		3,200
Speed per hour	knots	26

Armament:

3 torpedo tubes and mounts.
4 1-pounder rapid-firing guns.
4 automobile torpedoes.
600 rounds 1-pounder ammunition.
1 stowing case.

Weights carried:

Machinery, complete	tons	92
Ordnance, complete	do	6.3
Coal	do	12
Crew, boat, anchors, electric plant, equipment, water, etc	do	9

If on trial the average speed shall equal or exceed 26 knots per hour for two consecutive hours, the boat will be accepted in so far as the speed is concerned. If the speed falls below 26 knots per hour and exceeds 25 knots, the boat will be accepted at a reduced price, the reduction being at the rate of $10,000 per knot speed, below 26 knots. If the speed falls below 25 knots per hour the boat will, in the discretion of the Secretary of the Navy, be rejected, or accepted at a reduced price mutually agreed upon between the Secretary and the contractors. In case of rejection, any money that may have been paid to the contractors on account shall be refunded.

The time that will be allowed for the construction of these boats will be fifteen months from the date of signing the contract.

Although twenty-three firms in various parts of the country made application for and were supplied with specifications and plans, bids were received from only four, as follows:

Name and place of business of bidder.	Class 1, Department's plans.	Class 2, bidder's plans.
Union Iron Works, San Francisco, Cal.:		
One	$175,000	.....
Two (each)	173,000	.....
Three (each)	172,000	.....
Wolf & Zwicker Iron Works, Portland, Oreg	168,700	.....
Moran Brothers Co., Seattle, Wash	163,350	.....
Herreshoff Manufacturing Co., Bristol, R. I.:		
One	.....	$144,000
Two (each)	.....	144,000
Three (each)	.....	144,000

In view of the discretion vested in the Department by the act of Congress making appropriation for the construction of the torpedo boats, and upon the recommendation of the chiefs of the Bureaus of Construction and Repair and Steam Engineering, the contract for one of the torpedo boats was awarded to Moran Brothers Company, of Seattle, Wash., while that for the other two was given to the Herreshoff Manufacturing Company, of Bristol, R. I.

Light-draft composite gunboats Nos. 10, 11, 12, 13, 14, and 15.

The act asking appropriations for the Naval Service for the fiscal year ending June 30, 1896, also made provision for six light-draft composite gunboats of about 1,000 tons displacement, to be fixed by the Secretary of the Navy, and no one of which shall cost more than $230,000, or in all for said six gunboats, $1,380,000, exclusive of armament, and not more than two of said gunboats shall be built in one yard or by one contracting party, and in each case the contract shall be awarded by the Secretary of the Navy to the lowest, best responsible bidder. These vessels are also to be built under the provisions of the act of August 3, 1886, entitled "An act to increase the Naval Establishment," as to the materials for said gunboats, their engines, boilers, and machinery, save that in all their parts said gunboats shall be of domestic manufacture. The contracts under which the gunboats are to be built are to be in accordance with said act, except that no premiums are to be offered. It is further stipulated in the act of March 2, 1895, that the gunboats may be constructed of steel, or other metal, or of alloy.

Proposals for the construction of the above-mentioned gunboats have been invited under the following classes:

Class 1 A.—For the construction of the hull and machinery, including engines, boilers, and appurtenances for a gunboat with single-screw engines and full sail power, complete in all respects in accordance with plans and specifications provided by the Secretary of the Navy.

Class 1 B.—For the construction of the hull and machinery, including engines, oilers, and appurtenances, except electric-lighting plant (incandescent) for a gun-oat with twin-screw engines and steadying sails only, complete in all respects in ccordance with plans and specifications provided by the Secretary of the Navy.

Class 2.—For the construction of the hull and machinery, including engines, boil-s, and appurtenances, complete in all respects, in accordance with plans and speci-cations provided by the bidder.

Under Class 1 A bidders are requested to state the amount that ill be deducted from their bid if steam windlass, steam steerer, and lectric-lighting plant are omitted from the requirements.

Under Class 1 B bidders are to state the amount that will be deducted om their bid if steam windlass and steam steerer are omitted from the equirements, and will also state separately the amount that will be dded to their bid if an incandescent electric-lighting plant is added to he requirements.

The following elements and qualities are required by the terms of the circular defining the chief characteristics:

The average speed to be maintained for four consecutive hours, under conditions to be prescribed by the Secretary of the Navy, must not be less than 12 knots per hour.

The gunboats are to be built and fitted complete for sea by the contractors, with the exception of the ordnance and ordnance outfit of all kinds, equipage, and sea tores; that is, the Government to furnish spars, boats, furniture of all kinds, anchors, ables, rigging, canvas work, galleys, and galley outfit.

The spaces allowed for guns and ammunition are to be shown on the plans of esigns submitted.

Accommodations must be provided on each boat for a commanding officer and 10 ardroom officers, 125 men, and a marine guard of 10 men.

On the gunboats which have the incandescent electric-lighting plant one search ght is to be fitted.

The gunboats on trial trips for speed must carry the following weights, or the quivalent, in addition to the weight of the completed hull, machinery, water, and are parts:

	Single-screw gunboats.	Twin-screw gunboats.
	Tons.	*Tons.*
rdnance (guns and ammunition)	69.95	69.95
oal	100	120
quipment, including anchors and chains	*53.01	35.88
oats and outfit	6.94	6.94
pars	16	1
rew and effects	15	15
rovisions and clothing	20.27	20.27
iscellaneous stores and water	29.50	29.50
Total	310.67	298.54

* Including electric-lighting plant.

The coal capacity must be at least 200 tons of 43 cubic feet per ton.

Any and all designs submitted for these gunboats must be accompanied with com-lete plans and specifications for building and calculations of weight, displacement nd range of stability under the conditions of trial and deep-load displacement; so calculations showing trim and range of stability when the several water-tight ompartments are flooded; also such calculations as will demonstrate the satisfac-ry strength of the whole structure.

The specifications submitted by the bidders under Class 2 must cover fully the ound covered by the Department's specifications. Copies of the Department's ecifications will be furnished, in which bidders must show by erasures and addi-ons the exact nature of the hull and machinery, including engines, boilers, and quipment, complete in all respects, that they propose to build.

The design of machinery submitted must fulfill the general requirements to be sued by the Bureau of Steam Engineering. Such design must be accompanied by awings and specifications in sufficient detail to enable the strength of the princi-al parts and the probable efficiency of the whole design to be readily determined.

Further, all designs must be accompanied by detailed calculations for weight and position of center of gravity of all machinery, the former not to exceed the weight assigned in this circular if it is proposed to adopt the Department's design of hull.

The general dimensions and weights of the Department's design are as follows:

	Single-screw gunboats.	Twin screw gunboats.
Length on load water line ..... feet	168	174
Beam at load water line ..... do	36	34
Draft, normal, to bottom of keel ..... do	12	12
Displacement, normal, about ..... tons	1,000	1,000
Indicated horsepower, about	800	800
Speed per hour, about ..... knots	12	12

Armament:

6 4-inch R. F. guns.
4 6-pounder R. F. guns.
2 1-pounder R. F. guns.
900 rounds 4-inch ammunition.
2,002 rounds 6-pounder ammunition.
1,200 rounds 1-pounder ammunition.

Weights carried at 1,000 tons displacement.

	Single-screw gunboats.	Twin-screw gunboats.
	Tons.	*Tons.*
Machinery, complete	116.20	115.60
Ordnance, complete	69.95	69.95
Coal	100	120
Equipment, including anchors and chains	*53.01	35.88
Boats and outfit	6.94	6.94
Spars	16	1
Crew and effects	15	15
Provisions and clothing	20.27	20.27
Miscellaneous stores and water	29.50	29.50
Total	426.87	414.14

* Including electric-lighting plant.

If on trial the average speed shall equal or exceed an average of 12 knots per hour for four consecutive hours, the gunboat will be accepted in so far as the speed is concerned. If the speed falls below 12 knots per hour, and exceeds 11 knots, the gunboat will be accepted at a reduced price, the reduction being at the rate of $10,000 per knot speed below 12 knots. If the speed falls below 11 knots per hour, the gunboat will, in the discretion of the Secretary of the Navy, be rejected, or accepted at a reduced price mutually agreed upon between the Secretary and the contractors. In case of rejection any money that may have been paid to the contractors on account shall be refunded.

The time that will be allowed for the construction of these boats will be fifteen months from the date of signing the contract.

Plans and specifications for constructing these gunboats have been supplied, upon application, to seventeen shipbuilding firms, and the bids for same are to be opened on October 1.

Since issuing the circular to intending bidders the Department has decided that four of these gunboats shall be single screw and barkentine rigged, the remaining two having twin screws and only such steadying sail as can be carried on two light pole masts.

Seagoing coast-line battle ships Nos. 5 and 6.

In addition to the torpedo boats and gunboats already described, the act making appropriations for the naval service for the fiscal year ending June 30, 1896, made provision, under "Increase of the Navy," for two seagoing coast-line battle ships, to cost, exclusive of armament,

not more than $4,000,000 each; one of the battle ships to be built on or near the coast of the Pacific Ocean, or on the waters connecting therewith; provided, that if it shall appear from the bids received that the said vessel can not be built at a fair cost at the place fixed therefor in the proposal, the same may be built elsewhere in the United States.

In the cost of armament is included, besides the guns, ammunition, etc., all armor of turrets or barbettes, gun shields, etc., directly pertaining to the protection of the guns and loading positions only.

These vessels are to be built under the provisions of the act of August 3, 1886, entitled "An act to increase the Naval Establishment," as to materials for said vessels, their engines, boilers, and machinery, save that in all their parts said vessels shall be of domestic manufacture. The contracts under which the vessels are to be built are to be in accordance with the said act, except that no premiums are to be offered. It is further stipulated in the act of March 2, 1895, that the vessels may be constructed of steel or other metal or of alloy.

The Department, in advertising for these vessels to be built by contract, has invited proposals under two classes, viz:

Class 1.—For the construction of the hull and the machinery, including engines, boilers and appurtenances, equipment, except anchors and chains, and for the installation of ordnance and ordnance outfit, complete in all respects, in accordance with plans and specifications provided by the Secretary of the Navy.

Class 2.—For the construction of the hull and the machinery, including engines, boilers and appurtenances, equipment, except anchors and chains, and for the installation of ordnance and ordnance outfit, complete in all respects, in accordance with plans and specifications submitted by the bidders.

In the instructions to prospective bidders the following requirements are made:

Any design of the vessel submitted must be in sufficient detail, accompanied by such plans, specifications, and calculations, as to enable the Department to readily determine its value and that it fulfills the herein-mentioned general requirements; the calculations to include complete calculations of weights, displacement, and range of stability under the conditions of normal displacement; deep-load displacement, and light displacement; such calculations as will determine the extent of injury above and below the armored deck which may be suffered while retaining satisfactory buoyancy and stability, and also such calculations as will demonstrate the satisfactory strength of the whole structure.

The specifications submitted by the bidders under Class 2 must cover fully the ground covered by the Department's specifications. Copies of the Department's specifications will be furnished, in which bidders must show by erasures and additions the exact nature of the hull and machinery, including engines, boilers, and equipment, complete in all respects, that they propose to build.

It is contemplated, in the Department's design, to drive the vessel by twin screws. The engines to be of the vertical triple-expansion type, two in number—one on each shaft—and in two compartments. The boilers are placed in four compartments, and are five in number, three of them being double-ended and two single-ended.

Any alternate design of machinery submitted by contractors must fulfill the general requirements contained in the "Specifications to be followed by contractors for machinery" issued by the Bureau of Steam Engineering. Such design must be accompanied by specifications in sufficient detail to enable the strength of the principal parts and the probable efficiency of the whole design to be readily determined. Further, all designs must be accompanied by calculations showing in detail the total weights and position of center of gravity of all machinery, the former not to exceed the weight assigned in this circular if it is proposed to adopt the Department's design of hull.

The following elements and qualities are obtained and proved for in the Department's design, and their equivalent must be obtained and provided for in all designs submitted:

(1) The speed to be maintained at sea for four consecutive hours, under conditions to be prescribed by the Secretary of the Navy, to be not less than an average of 16 knots an hour.

(2) The arrangements of decks above water to provide ample free board and berthing accommodations.

It is contemplated to fit two military masts with fighting tops, to carry no sail. The boats to be stowed clear of the blast of the guns, but two lifeboats to be so carried as to be rapidly lowered under all conditions of weather.

(3) The protection of the hull against injury to the water-line region is to be afforded by means of a side armor belt of a maximum thickness of not less than 15 inches and a mean depth of 7 feet 6 inches. The belt is to extend at least from the stem to the after barbette, and to maintain the maximum thickness throughout the engine and boiler spaces; from thence forward it may be tapered gradually to a thickness of 4 inches. The transverse armor at the after end of the belt and just forward of the boiler will be not less than 8 inches in thickness. Barbettes for 13-inch guns will have armor not less than 15 inches thick, except in rear, where it will be reduced to 12 inches. The turret port plates to be 17 inches in thickness, the balance of armor plating 15 inches thick. The ship's side, from the armor belt to the main deck, will be protected by not less than 5 inches of steel armor from barbette to barbette. Coal is to be carried back of a portion of this 5-inch casemate armor.

An armored deck is to extend throughout the length of the vessel. Where this steel deck is worked flat the thickness will not be less than 2¾ inches, and where worked with inclined sides the slopes will be 3 inches in thickness. A cellulose belt is to be fitted along the sides the whole length of the ship.

A conning tower of not less than 10 inches in thickness, having an armored communication tube not less than 7 inches in thickness, will be carried in a suitable commanding position, the tube extending to the armored deck and affording protection to voice tube, bell wires, etc.

The 8-inch gun turrets will be superposed on the 13-inch turrets, and the armor will be not less than 11 inches in thickness on the port plates and 9 inches elsewhere.

In wake of the 5-inch guns on the main deck is to be continuous armor 6 inches thick extending between the turrets. Further protection is to be afforded by splinter bulkheads between the guns 2 inches thick extending from deck to deck.

Protection is to be afforded the smaller guns by shields and extra side plating.

(4) The battery of the vessel is to be: Four 13-inch B. L. R., four 8-inch B. L. R., fourteen 5-inch R. F. guns, twenty 6-pounder R. F. guns, four 1-pounder R. F. guns, and four machine guns, one field gun.

The supply of ammunition is to be as follows:

Two hundred rounds 13-inch ammunition, 500 rounds 8-inch ammunition, 3,500 rounds 5-inch ammunition, 10,000 rounds 6-pounder ammunition, and 2,400 rounds 1-pounder ammunition.

Stowage space for ammunition required.

Kind of ammunition.	Number of rounds.	Number of rounds in each box.	Number of boxes.	Dimensions of each box.		
				Height.	Breadth.	Length.
				Inches.	*Inches.*	*Inches.*
5-inch fixed ammunition	3,500	1	3,500	7	7	53
6-pounder Hotchkiss	9,999	11	909	16.88	10.63	21.50
1-pounder Hotchkiss	2,400	60	40	14.50	10.20	22.75
6-pounder saluting cartridges	297	11	27	9¾	9¾	16⅞
1-pounder drill cartridges	20	10	2	14¼	10.6	22½
6-pounder drill cartridges	100	10	10	9¾	9¾	16⅞
Saluting charges in 2-pound bags stowed in tanks	1,700	95	18	22¼	16¼	16¼
.45-caliber ball cartridges	208,000	1,000	208	8¼	15¼	14
.22-caliber cartridges	109,000	1,000	109	9¾	16¼	9
.38-caliber ball cartridges	36,000	3,000	12	9¾	14¼	9

An 8-inch projectile, ready for stowage, has the capacity of a cylinder 31.5 inches long and 10 inches diameter.

The 8-inch powder tank holding a full charge is about 47¼ inches long and 10¼ inches diameter.

One 13-inch projectile requires a space equal to a cylinder whose diameter is 13.2 inches and length 48 inches.

One powder tank to hold one-half of a full charge is about 43 inches long and 17 inches diameter.

Eight torpedoes 11 feet 8 inches long, 17.7 inches diameter.

In addition to the above there will be required about 190 cubic feet for the stowage of the submarine outfit.

(5) The torpedo outfit to consist of five torpedo tubes, eight torpedoes, and suitable allowance of gun cotton for mines and miscellaneous purposes. The torpedo tubes will be placed two on each broadside and one in the bow.

(6) Provisions and small stores are to be carried for three months. Distilling apparatus and evaporators will be fitted for fresh-water supply, the allowance of water to be carried to be sufficient for fifteen days, besides water for sanitary purposes. Clothing, contingent and small stores to be carried in sufficient quantity for the service of the ship for one year.

(7) It is contemplated, as previously stated, to drive the vessels by twin screws, the engines to be of the vertical, triple-expansion type, two in number, in two separate compartments. The boilers, three of which are of the cylindrical double-ended pattern and two single-ended boilers, to be placed in four compartments. The weight of propelling machinery, including water and stores, should not exceed 1,100 tons.

Alternate machinery must fulfill the general requirements before laid down.

(8) The total coal-bunker capacity must not be less than 1,210 tons, stowed in bunkers without trimming by hand, of which at least 410 tons are to be carried at normal displacement.

(9) The electric-lighting plant should consist of three units, each unit having engine, dynamo, and combination bedplate, and each dynamo having a rated output of 400 amperes at 80 volts. The total weight of the three units complete should not exceed 31,500 pounds. The total weight of the whole electrical installation, including dynamos, engines, bedplates, all fittings, wirings, and stores, and four search lights, should not exceed 44 tons.

General dimensions of Department design.

Length on load water line (normal displacement)	feet..	368
Molded breadth at load water line	do...	72
Mean draft at normal displacement	do...	23½
Normal displacement (about)	tons..	11,500
Total coal capacity, loose stowage	do...	1,210
Coal carried at normal displacement	do...	410

Approximate weights carried at 11,500 tons displacement.

	Tons.
Four 13-inch B. L. R. and mounts; Four 8-inch B. L. R. and mounts; Fourteen 5-inch R. F. G. and mounts	534
Twenty 6-pounders; Four 1-pounders; Four machine guns; One field gun	28
200 rounds 13-inch ammunition	161
500 rounds 8-inch ammunition	93
3,500 rounds 5-inch ammunition	184
6-pounder; 1-pounder; Machine, etc. ammunition	63
Torpedo outfit, stores, and equipment	30
Machinery, complete	1,100
Coal (at normal displacement)	410
Equipment weights, including electric plant	160
Turret-turning machinery, complete installation	100
Boats and outfit	30
Masts and spars	50
Officers, crew, and effects	70
Provisions and clothing	115
Miscellaneous stores and water	95
Complement, officers and men (about)	490

If on trial the average speed shall equal or exceed a speed at sea of 16 knots per hour for four consecutive hours, the vessel will be accepted in so far as the speed is concerned. If the speed falls below 16 knots and exceeds 15 knots per hour, the vessel will be accepted at a reduced price, the reduction being at the rate of $10,000 per knot speed below 16 knots. If the speed falls below 15 knots per hour, the vessel will, in the discretion of the Secretary of the Navy, be rejected, or accepted at a reduced price mutually agreed upon between the Secretary and the contractors. In case of rejection, any money that may have been paid to the contractors on account shall be refunded.

The time that will be allowed for the construction of these vessels will be three years from the date of signing the contract.

Under date of September 14 the Department invited proposals for the construction of the above-mentioned seagoing battle ships, bids to be opened at noon of November 30, 1895. At the time of submitting this report only three firms have made application for plans and specifications, but it is probable that this number will be increased.

Steam tug for League Island Navy-Yard.

In the act making appropriations for the naval service for the fiscal year ending June 30, 1896, an item of $25,000 was provided, under "Public works," for the construction of one steam tug for the navy-yard, League Island, Pa. Plans and specifications have been prepared for the construction of this vessel, and the necessary orders were issued on June 26, 1895, to the commandant of the Norfolk Navy-Yard, where the tug is to be built.

The general dimensions and details of the design are as follows:

	Feet.	Inches.
Length over all	102	6
Length on load water line	96	9
Breadth, extreme, exclusive of guards	21	0
Breadth, extreme, to outside of guards	22	0
Depth, top of beams to top of floor	10	3¼
Draft, fore edge of stem at L. W. L	8	0
Draft, extreme, at sternpost	9	1
Freeboard, least	3	4½

Displacement at load water line, 225 tons.
Type of engine, triple-expansion inverted.
Diameter of cylinders, 13 inches, 20 inches, 21½ inches.
Stroke of piston, 24 inches.
Revolutions per minute, 144.
Indicated horsepower, 450.

Improvement of navy-yard plants.

In previous reports the Bureau has urged upon the Department the desirability of fully equipping the three principal navy-yards for building and repair work. The reports of naval constructors (Appendix C) outline at some length the exact nature of the improvements required in the construction plant, and the Bureau concurs in the recommendations contained therein.

It is specially desirable that the buildings in which valuable machine tools are housed should be kept in good condition, as the deterioration of the building soon results in injury to the machinery. Since submitting its report for last year many important additions to the buildings of the construction plant at the navy-yard, New York, have been undertaken by the Bureau of Yards and Docks, and when these improvements are completed the efficiency of the construction and repair department at the yard will be greatly increased.

While the Bureau approves the recommendations of naval constructors, as set forth at the end of this report, it is deemed inexpedient to ask for an appropriation to cover all the improvements therein suggested, it being considered wiser to recommend for immediate appropriation only such sums as seem necessary to put the plants at the various navy-yards in a condition to meet the demands of the immediate future. Therefore only the following items are submitted:

For navy-yard, Portsmouth, N. H., for necessary alteration of shops and purchase of new tools	$12,000
For navy-yard, Boston, Mass., for necessary alteration of shops and purchase of new tools	20,000
For navy-yard, New York, N. Y., new tools, portable hoisting engine, push cars, boilers in plumbing shop, and alterations in arrangement of plant necessitated by changes in buildings	75,000
For navy-yard, League Island, Philadelphia, Pa., tools for ship-fitting shop, furnaces, bending slabs, steam hammers, etc	30,000
For navy-yard, Norfolk, Va., locomotive traveling crane, floating derrick, ship-fitting shop at dry docks, etc	125,000
For navy-yard, Mare Island, Cal., for completing bending slabs, installing galvanizing and electric-power plants, building reverberatory furnace, supplying and installing new tools, etc	70,000

Repair shops at Port Royal and Puget Sound.

The Bureau renews its recommendation of last year that $75,000 be appropriated for each of the two new stations at Port Royal and Puget Sound in order that the repair shops at those stations might be equipped with the tools necessary to carry on the ordinary repair work of vessels fitting out.

In the act making appropriations for the naval service for the fiscal year ending June 30, 1896, an appropriation of $60,000 was made for the building of a construction and repair workshop at Port Royal, S. C., so that the above recommendation of an appropriation of $75,000 to fit out this shop is rendered urgent in order that there may be no unnecessary delay in supplying the necessary outfit of machine tools. It is hoped that Congress will this year make proper provision for a construction and repair workshop at Puget Sound Naval Station, and the item of $75,000 for fitting out this shop is therefore again recommended.

Dry docks.

Any consideration of the additions necessary to improve navy-yard plants would be incomplete without some reference to the increasing necessity for dry docks. Although their design and construction do not come under this Bureau, their use is confined almost exclusively to the Bureau of Construction and Repair, and it is therefore considered not inappropriate that some reference should be made to the needs of the service in this direction.

At the present time there is no Government or private dock in the United States which can be used to dock the U. S. S. *Indiana* preliminary to her trial trip. The docks in course of construction at New York, Puget Sound, and Port Royal are large enough, but, owing to difficulties and delays in their construction, it will be some time before they are in condition to receive vessels.

Of the docks already built, several have sufficient depth of water over the sills to dock our largest vessels, but the narrowness of their entrances is such as to preclude the entrance of vessels such as the *Indiana* and class.

In the original designs of the *Indiana* bilge keels were proposed, but on account of the narrow entrances of the docks then in course of construction these bilge keels were subsequently omitted, thus sensibly reducing the steadiness of the vessel in a sea way and diminishing in consequence their efficiency as a gun platform. Bilge keels have been omitted in subsequent designs for the same reason, but it is more than probable that this defect will have to be remedied as soon as we have docks which can easily admit vessels of great beam fitted with such appendages.

Aside from the impossibility of docking our largest vessels in the docks now ready for service, the Department is sometimes put to great inconvenience in providing docking facilities for our smaller vessels. From past experience it is fully realized that steel ships must be frequently docked in order that their bottom plating may be preserved from deterioration and that the rapid fouling of the bottom may not entail a wasteful expenditure of coal to maintain a moderate rate of speed. But, on account of docks being occupied for a long time by vessels under repair, it is sometimes impracticable to dock our cruising vessels as promptly as experience has shown to be advisable.

If such a condition confronts the Department in time of peace, it is easily realized how serious a defect it would prove in time of war, when the casualties of battle and necessity for keeping the bottoms of vessels in such condition that they might develop their highest speed would largely increase the demands on our docking facilities.

The navy-yard at Portsmouth, N. H., is especially lacking in docking facilities, and at the present time is the only Government shipbuilding or repair establishment which is not provided with a properly equipped dry dock. In the opinion of this Bureau this is a serious deficiency and should be rectified at an early date. The balanced floating dock at this station has been in service for nearly half a century and is now not only obsolete, but in such a condition as to make it inadvisable to use it in docking a vessel of even moderate displacement.

There are unusual natural advantages of location at this yard which would greatly reduce the cost of construction of a dock, and the machinery plant in the construction and repair department has been enlarged and modernized so that all ordinary repairs of steel vessels can now be satisfactorily executed.

The climatic advantages of this station deserve serious consideration in fitting out or repairing vessels which have had a long tour of duty in southern or tropical waters and constitute another argument for the proper equipment of this yard for making all the ordinary repairs due to the wear and tear and casualties of cruising.

For the above reasons the attention of the Department is respectfully invited to the necessity of providing adequate docking facilities at the Portsmouth (N. H.) Navy-Yard.

Although all the other Government shipbuilding and repair yards are provided with at least one dry dock, they are hardly equal to the present necessities of the service, and must surely prove inadequate to meet the rapidly increasing demands of the fleet—taking account of the vessels in reserve as well as those in active service.

The Bureau is much impressed with the needs of the service in this most important element in the efficiency of our Navy, and begs to urge upon the Department the necessity for immediate action.

The following extracts from the reports of naval constructors at the Boston, Norfolk, and Mare Island navy-yards set forth the deficiencies of the present plants and contain recommendations which are concurred in by the Bureau and are respectfully presented for the favorable consideration of the Department.

The naval constructor at Boston reports as follows:

* * * I consider that a wooden dry dock of sufficient size to take the largest vessel that we now have under construction, or may be likely to design in the future, should be built at this yard. There is great need of greater and better docking facilities for vessels of the Navy, and a dock such as I have referred to can be best and most economically built on the northeast side of building No. 24 and about equally distant from the present stone dry dock. The basin which now exists is a natural one, and seems formed by nature itself for the location of such a dry dock. A dock

of this kind could be built of wood in very much less time and at less cost than it would take to make alterations to the present stone dock, thereby having two docks; and in this connection as a matter of economy and dispatch, the two docks coming near together with the present dock engine and boiler house between them, they could be pumped out by the new pumps and boilers now in use for the present dry dock. Taking into consideration the building in which they are located, and the chimney, some 124 feet high, this is a combination of building, engine, pumps, boilers and chimney that could not be duplicated in any other part of the yard for less than $150,000. Such a dock could, by utilizing the present arrangements and location, be built of wood at a cost of about $600,000, and would be invaluable to the Government.

The naval constructor at the Norfolk Navy-Yard renews his recommendations of last year, which were as follows:

Dry dock No. 1 (stone dock) is limited in capacity to vessels of the size of the *Atlanta*, and if lengthened 100 feet could be used for all the cruiser class of vessels, which would increase its usefulness to a very large extent.

Dry dock No. 2 is so constructed at the gate that it can not be used for docking the battle ships now building, and it will be exceedingly dangerous to attempt the docking of the *Texas* or armored cruisers in this dock when at the load draft. An additional dry dock of sufficient size for these vessels is recommended, and the importance and necessity of beginning at the earliest possible moment the construction of such a dock at this navy-yard can not be overestimated. An available and desirable site adjoins dry dock No. 2.

The difficulty of berthing ships at this navy-yard, owing to insufficient wharfage, has been frequently experienced during the past year, and the necessity of berthing ships at a considerable distance from the shops has delayed and increased the cost of the work of repairs. It has occurred several times during the past year that both dry docks were in use and every berth at the wharves occupied. On two occasions it was necessary to berth a ship at St. Helena, opposite the navy-yard.

It is recommended that the timber basin, no longer required for the original purpose, should be cleared out and converted into a fitting basin by building a wall and gate across the continuation of Rowan avenue, utilizing that portion of the dock to the west for spar timber, the eastern portion to be deepened and provided with retaining walls and a pontoon bridge at the eastern end.

The naval constructor at the Mare Island Navy-Yard urgently recommends the building of an additional dry dock at that station, and comments as follows on the present insufficiency of the docking facilities.

* * * There is now but one dock, and it frequently occurs that it must be occupied for extended periods in repairing or building ships. Should it become necessary to dock another ship while the dock is thus occupied it could only be done at great additional expense by temporarily floating out the ship then in dock and afterwards redocking her. In time of war this state of affairs would undoubtedly cause great embarrassment. It is suggested that a wooden dock be built on the site of the old sectional dock basin of ample size for the largest ships we may build and divided into two parts by a central caisson to reduce the expense in docking small ships, the outer caisson to be of sufficient breadth and stability to enable the railway running along the water front to be carried across it.

In the present stone dock the lower broad altar necessitates the bilge block ways being fitted at an angle such that there is much danger in docking new ships, and it is necessary to suspend pumping and send down a diver to insure the blocks passing clear of the bilge keels.

Efficiency of navy-yard plants.

In previous reports the Bureau has called attention to the difficulties which would arise from the completion of certain vessels which had been in course of construction for some years past at the three principal navy-yards. This difficulty now confronts the Department, since the completion of the vessels building at the New York and Norfolk navy-yards has necessitated the discharge of a large proportion of the skilled force hitherto employed at those stations, and it will be exceedingly difficult to maintain the efficiency of the construction and repair plants at those yards unless early measures are taken to give regular employ-

ment to a small force of skilled mechanics in each of the principal branches of that department in the above-mentioned yards.

The most economical and efficient way of maintaining at a navy-yard a force competent to make all the necessary repairs and alterations on ships fitting out is to have some vessel building at such yards, so that, when there are no vessels under repair, the permanent force can be employed on the new constructions.

The machinery plants at New York and Norfolk have been installed at great labor and expense, and the present and prospective diminution in the force of mechanics must necessarily result in the partial deterioration of those plants. Other things being equal, the greater the amount of work which is being done at a yard the cheaper the rate of production, since there are certain large fixed charges for maintenance and supervision, these charges continuing quite regardless of the amount of work. The foremen and certain leading men must always be retained, even if there is no work going on, in order that the nucleus of the organization may be maintained. But even under these conditions it is difficult to organize an efficient force of mechanics at short notice, since the best men, when discharged by the Government, will assuredly seek positions elsewhere, and if possible will make arrangements for work where there is some chance of permanency.

It is thus readily seen that the excessive diminution of the present well-trained forces at the Norfolk and New York navy-yards would result in direct injury to the Government, depriving it eventually of some of its best mechanics, while sensibly increasing the cost of repair work.

For the above reasons, and in order that the plants at our principal naval stations may always be kept in a high state of efficiency for the performance of the general work of repairing and fitting out, it is earnestly recommended that in future appropriations provision be made for having at least one vessel in course of construction at each of the three principal navy-yards.

Experimental tank.

In its report last year the Bureau emphasized the necessity of an experimental tank in which carefully conducted experiments could be made with models in such a way as to anticipate the performance of the completed vessel, these results not being capable of attainment in any other way.

Several foreign Governments have already preceded us in this direction and have had constructed elaborate experimental stations, the British Admiralty taking the lead. There are three or four officials from the Construction Department constantly on duty at the Admiralty experimental tank at Haslar, and there is plenty of evidence obtainable which goes to prove the inestimable value of the data derived from the experiments there conducted.

Many of the most valuable contributions to our knowledge of the "resistance of ships" were made by the late Mr. William Froude, who was the originator and director of the first Admiralty experimental tank.

The following brief description of the origin and growth of experimental tanks will give an idea of the esteem in which they are held by those who have had experience with them, and summarizes the advantages which may be derived from intelligent experiment in this direction:

Experiments to determine the resistance of ships in advance of construction by towing models of the proposed ships were commenced by the late Mr. William Froude in 1872 in a tank built by him at Torquay, England. This tank was 280 feet

long, 36 feet wide, and 10 feet deep, and in it experiments were carried on for the Admiralty, and in connection with the towing experiments with the *Greyhound* certain laws and deductions were established beyond question. Since the death of Mr. Wm. Froude in 1879 the work has been carried on by his son, Mr. R. E. Froude, and many useful and valuable results have been obtained, the designs of many proposed ships having been altered after model trials, notably in the case of the *Polyphemus* and the *Medway* class of gunboats of the British navy, the deductions being afterwards verified by the performance of the vessels. In 1882, a tank of about the same dimensions and with practically identical appliances was constructed by Denny Bros., of Dumbarton, Scotland, in which many thousands of experiments have been conducted with both engineering and commercial success; the tank having enabled them, as a case in point, to successfully construct a high-speed vessel for the Belgian Government under conditions so rigid that under ordinary circumstances surety of fulfilling them would have been impossible.

Mr. William Denny, one of the most progressive and well-informed Scotch shipbuilders, in a letter written in 1887 relative to the importance of the assistance that an experimental tank may render to the naval designer, expresses himself as follows:

"The truth is that of all the problems about a steamship, the only one at the present moment incapable of being solved by a priori methods in extreme cases is that of the speed and power. No ability and no training will enable even the most skillful naval architect to overcome the want of an experimental tank in coping with these questions. My partners are so firmly convinced of the value of the tank that every one of them regards the large amount of money sunk in it in the form of a capital, and the large amount still to be sunk in it, as one of our best investments, and have met without grudging the annual outlay required for its administration."

The establishment of an experimental tank would not only benefit the naval service, but would greatly promote the shipbuilding interests of the country at large by furnishing reliable information as to the future performance of new types of commercial vessels that would aid American shipbuilders to compete on more equal terms with foreign yards in which similar information is already available.

The British Admiralty considered the results obtained so valuable that in 1886 a new tank was constructed at Haslar, near Portsmouth, and the apparatus at Torquay was removed to that place and installed there with many improvements and additions, under the charge of Mr. R. E. Froude. The new tank is 400 feet long, 20 feet wide, and 9 feet deep, and commodious offices are attached with a view of entering extensively upon the work of experimental investigation.

In 1889 an apparatus was constructed by the Italian Government at Spezzia, which is practically a duplicate of the British plant at Haslar, except that the tank is 500 feet long and 22 feet wide. The latest apparatus constructed is that installed by the Russian Government at St. Petersburg in 1892.

In conducting model experiments the models are tested at varying speeds of small interval between certain fixed limits, and also at varying drafts of water and condition of trim. The results, after being corrected, are platted, and curves drawn, giving in advance full data of just what the completed ship will do in all conditions, with smooth water.

Many advantages are realized from the results of these experiments. The most suitable form for a certain speed may be determined, and the proper adjustment of power to form arranged. On the other hand, a ship having a given form, the most suitable speed can be selected at which it can be most economically propelled. The form and position of the waves created by the passage of a ship through the water at any speed may be determined. The settling or subsidence of the ship while running may be measured, this being an important feature in light-draft or low freeboard vessels. The speed at which models can be run being relatively great, the performance of ships at higher speeds than have been realized may be predicted, and the possibilities of further advancement, so far as form is concerned, determined. Much power is frequently wasted in driving unsuitable forms at a high rate of speed, and waste of power involves both heavier machinery and boilers and increased coal consumption over what would be necessary with the proper form. Displacement is often sacrificed to attain a certain speed, when the same speed might have been realized with largely increased carrying capacity.

The original outlay for such an experimental plant is small indeed when compared with the valuable results to be obtained therefrom, not only in the direction of interesting scientific developments, but the much more tangible material advantages which ensue from an intelligent knowledge of the best forms to be used to fulfill definite conditions, thereby saving a great deal of useless expenditure of time and money in making subsequent changes which are at best only makeshifts.

There can be no doubt of the necessity for such a plant as that described above, and the Bureau most earnestly recommends that an appropriation of $100,000 be made for that purpose, as it is believed

that such a sum would suffice for the complete installation of an experimental tank, including all necessary structures.

With such a station, properly equipped and officered, the Department would be in a condition to make original research and act on quite independent lines instead of being compelled, in great measure, to rely upon the experiments and deductions of others, which must of necessity be accepted at their full value, as there is no means in this country of testing their accuracy.

Plans.

There have been included in this year's report certain plans which are necessary to the proper explanation of improvements recommended at navy-yards.

In conformity with the instructions of the Department that no plans are to be included in reports except those necessary to the proper explanation of same, I beg to state that the accompanying plans come under this provision.

List of vessels of the United States Navy.

The following table gives the dimensions and other particulars of vessels built and building, with their present condition and station:

Table of vessels of t

ARMORED STE

Name.	Type.	Rig.	By whom and where built or building.	Condition o service.
Indiana	Steel coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	Awaiting commission.
Iowa	Steel seagoing battle ship. 2 12″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	Building
Maine	Steel armored battle ship. Two 10″ barbette turrets.	Two military masts.	U. S. navy-yard, Brooklyn, N. Y.	In commission, unassigned.
Massachusetts	Steel coast line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Wm. Cramp & Sons, Philadelphia, Pa.	Building
Oregon	Steel coast-line battle ship. 2 13″ barbette turrets. 4 8″ barbette turrets.	One military mast.	Union Iron Works, San Francisco, Cal.	Building
Texas	Steel armored battle ship. Two 12″ turrets.	Two military masts.	U. S. navy-yard, Norfolk, Va.	In commission, unassigned.
Battle ship No. 5	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	Two military masts.	Contract not yet awarded.	Bids to be opened Nov. 30, 1895.
Battle ship No. 6	Steel seagoing coast-line battle ship. 2 13″ barbette turrets. 2 8″ turrets superposed.	Two military masts.	Contract not yet awarded.	Bids to be opened Nov. 30, 1895.

ARMORE

Brooklyn	Steel armored cruiser. 4 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Building
New York	Steel armored cruiser. Two 8″ barbette turrets.	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Flagship, North Atlantic station.

ARMOR

Katahdin	Steel harbor defense ram.	.....	Bath Iron Works, Bath, Me.	Awaiting acceptance.

States Navy—Continued.

LS—BATTLE SHIPS.

fully equipped ready sea, all stores on board. mal coal supply.			Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft and displacement.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Tons.*				*Tons.*	*Tons.*	*Tons.*	*Ft. In.*
69 3	24 0	10,288	Twin screw vertical triple expansion.	15.547	9,738	43	400	1,640	27 1¾
72 2½	24 0	11,410	....do.....	16	11,000	45.95	625	1,780	26 9¾
57 0	21 6	6,682	.....do.....	17.45	*9,293	32.32	400	896	22 6
69 3	24 0	10,288	.....do.....	15	9,000	43	400	1,640	27 1¾
69 3	24 0	10,288	.....do.....	15	9,000	43	400	1,640	27 1¾
64 1	22 6	6,315	.....do.....	17	8,000	30.22	500	850	23 8
72 5	23 6	11,525	.....do.....	16	10,000	47.25	410	1,210	25 1
72 5	23 6	11,525	.....do.....	16	10,000	47.25	410	1,210	25 1

SERS.

64 8¼	24 0	9,271	Twin screw vertical triple expansion.	20	16,000	41.19	900	1,753	26 2
64 10	23 3½	8,200	.....do.....	21	17,401	39.50	750	1,290	26 8

43 5	15 0	2,155	Twin screw vertical triple expansion.	17	4,800	19.16	175	192.70	16 0

* On mean draft of 18 feet 11 inches displacement of 5,660 tons.

Table of vessels of the

ARMORED STEEL.

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Indiana	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Iowa	4 12″ B. L. R. 8 8″ B. L. R. 6 4″ R.F.guns.	20 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	5	14	15 5	15 8 and 6	.....	2½
Maine	4 10″ B. L. R. 6 6″ B. L. R.	7 6-pdr. R. F. 8 1-pdr. R. F. 4 Gatlings	4	12	8	12 10	.....	2
Massachusetts	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1 pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Oregon	4 13″ B. L. R. 8 8″ B. L. R. 4 6″ B. L. R.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings	6	18	15 6	17 8 6	.....	2½
Texas	2 12″ B. L. R. 6 6″ B. L. R.	12 6-pdr. R. F. 6 1-pdr. R. F. 4 37mm H. R. C. 2 Gatlings	4	12	12	.....	.....	2
Battleship No. 5	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	5	Top 15. Bottom 9½. Water line 13.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½
Battleship No. 6	4 13″ B. L. R. 4 8″ B. L. R. 14 5″ R.F.guns.	20 6-pdr. R. F. 6 1-pdr. R. F. 4 Gatlings 1 field gun	5	Top 15. Bottom 9½. Water line 13.	17 15 11 9	15 12	For'd 3″ Aft 5″	2½

ARMORED

Brooklyn	8 8″ B. L. R. 12 5″ R.F.guns.	12 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	5	3	5½	8 and 4	6	3
New York	6 8″ B. L. R. 12 4″ R.F.guns.	8 6-pdr. R. F. 4 1-pdr. R. F. 4 Gatlings	3	4	5½	10	6	3

ARMORED

Katahdin	.....	4 6-pdr. R. F	.....	6 3	.....	.....	.....	.....

ited States Navy—Continued.

SSELS—BATTLE SHIPS.

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
.....	424	*$3,020,000	June 30, 1890	Nov. 19, 1890	May 7, 1891	Nov. 19, 1893	.....
36	450	*3,010,000	July 19, 1892	Feb. 11, 1893	Aug. 5, 1893	Feb. 11, 1896	.....
.....	370	†2,500,000	Aug. 3, 1886	.....	Oct. 17, 1888	.....	Sept. 17, 1895
.....	424	*3,020,000	June 30, 1890	Nov. 18, 1890	June 25, 1891	Nov. 18, 1893	.....
.....	424	*3,180,000	June 30, 1890	Nov. 19, 1890	Nov. 19, 1891	Nov. 19, 1893	.....
30	362	†2,500,000	Aug. 3, 1886	.....	June 1, 1889	.....	Aug. 15, 1895
40	480	.....	Mar. 2, 1895	.....	.....	.....	.....
40	480	.....	Mar. 2, 1895	.....	.....	.....	.....

RUISERS.

46	515	*$2,986,000	July 19, 1892	Feb. 11, 1893	Aug. 2, 1893	Feb. 11, 1896	.....
40	526	*2,985,000	Sept. 7, 1888	Aug. 28, 1890	Sept. 30, 1890	Jan. 1, 1893	Aug. 1, 1893

AM.

.....	91	*$930,000	Mar. 2, 1889	Jan. 28, 1891	July, 1891	Jan. 28, 1892	.....

* Contract price. † Limit of cost.

Table of vessels of the United

ARMORED VESSELS—DOUBLE-

Name.	Type.	Rig.	By whom and where built or building.	Condition of service.
Amphitrite	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	One military mast.	Harlan & Hollingsworth, Wilmington, Del.	North Atlantic station.
Miantonomoh	Iron low freeboard coast-defense monitor. Two compound armor turrets.	do	John Roach, Chester, Pa.	In ordinary, League Island, Pa.
Monadnock	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	do	U. S. navy-yard, Mare Island, Cal.	In course of completion.
Monterey	Steel low freeboard monitor. Two steel barbette turrets.	do	Union Iron Works, San Francisco, Cal.	Pacific station.
Puritan	Iron low freeboard coast-defense monitor. Two steel barbette turrets.	do	John Roach, Chester, Pa.	Completing at navy-yard, New York.
Terror	Iron low freeboard coast-defense monitor. Two steel turrets.	do	Wm. Cramp & Sons, Philadelphia, Pa.	do

Table of vessels of the United

ARMORED VESSELS—DOUBLE-

Name.	Batteries.			Armor.			Protective deck.	
	Main.	Secondary.	Torpedo tubes.	Sides.	Turrets.	Barbettes.	Slopes.	Flat.
				Inches.	*Inches.*	*Inches.*	*Inches.*	*Inch.*
Amphitrite	4 10″ B. L. R. 2 4″ R.F. guns.	2 6-pdr. R. F 2 3-pdr. R. F. 2 37mm H. R. C 2 1-pdr. R. F. G.		9 5	7½	11½		1½
Miantonomoh	4 10″ B. L. R.	2 6-pdr. R. F. G. 2 3-pdr. R. F. G. 2 1-pdr. R. F. G.		7	11½			1½
Monadnock	4 10″ B. L. R. 2 4″ R.F. guns.	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 1-pdr. R. F. G.		9 5	7½	11½		1½
Monterey	2 12″ B. L. R. 2 10″ B. L. R.	6 6-pdr. R. F 4 1-pdr. R. F 2 Gatlings		13 8 6	For'd 8″ Aft 7½″.	For'd 13″ Aft 11½″.		3
Puritan	4 12″ B. L. R. 6 4″ R.F. guns.	6 6-pdr. R. F 2 37mm H. R. C. 4 Gatlings		14 10 6	8	14		2
Terror	4 10″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 2 37mm H. R. C. 2 Gatlings		7	11½			1½

es Navy—Continued.

RETED MONITORS.

p fully equipped ready or sea, all stores on board. formal coal supply.										
water line.	Extreme breadth.	Mean draft.	Displacement.	Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft and displacement.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
In.	*Ft. In.*	*Ft. In.*	*Tons.*				*Tons.*	*Tons.*	*Tons.*	*Ft. In.*
6	55 10	14 6	3,990	Twin screw inclined compound.	12	1,600	27.67	250	250	14 7½
6	55 10	14 6	3,990	.....do.....	10.5	1,426	27.67	250	260	15 0
6	55 10	14 6	3,990	Twin screw horizontal triple expansion.	14.5	3,000	27.67	250	250	14 7½
0	59 0	14 10	4,084	Twin screw vertical triple expansion.	13.6	5,244	26.74	200	236	15 4
6	60 1½	18 0	6,060	Twin screw horizontal compound.	12.4	3,700	33.64	400	410	18 3
6	55 10	14 6	3,990	Twin screw inclined compound.	12	1,600	27.67	250	250	14 7½

tes Navy—Continued.

RRETED MONITORS.

Complement.		Cost of hull and machinery.	Date of act authorizing building or completion.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
ficers.	Men.						
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Apr. 23, 1895
13	136	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	Oct. 27, 1891
26	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	.....
19	172	†$1,628,950	Mar. 3, 1887	June 14, 1889	July, 1889	June 14, 1892	Feb. 13, 1893
.....	195	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1875	.....	.....
.....	145	(*)	Mar. 3, 1885 Aug. 3, 1886 Mar. 3, 1887	.....	1874	.....	.....

*Appropriation to complete Amphitrite, Miantonomoh, Monadnock, Puritan, and Terror, $3,178,046.
† Contract price.

Table of vessels of the U

ARMORED VESSELS—SIN

Name.	Type.	Keel laid.	By whom and where built.	Conditon.	Dimensions.			Displacement.
					Length between perpendiculars.	Breadth.	Mean draft.	
					Feet.	*Ft. In*	*Ft. In*	*Tons.*
Ajax	Low free-board single-turret monitor.	1862	Snowdon & Mason, Pittsburg, Pa.	Camden, N. J., for use of naval militia.	225	43 8	13 6	2,100
Comanche	do	1862	Donahue, Ryan & Secor, Jersey City, N. J.	In ordinary, Mare Island, Cal.	200	46 0	11 6	1,875
Canonicus	do	1862	Harrison Loring, Boston, Mass.	In ordinary, League Island, Pa.	225	43 8	13 6	2,100
Catskill	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875
Jason	do	1862	John Ericsson, Chester, Pa.	do	200	46 0	11 6	1,875
Lehigh	do	1862	do	do	200	46 0	11 6	1,875
Mahopac	do	1862	Z. & F. Secor, Jersey City, N. J.	do	225	43 8	13 6	2,100
Manhattan	do	1862	Perine, Secor & Co., Jersey City, N. J.	do	225	43 8	13 6	2,100
Montauk	do	1862	John Ericsson, Brooklyn, N. Y.	do	200	46 0	11 6	1,875
Nahant	do	1862	Harrison Loring, Boston, Mass.	do	200	46 0	11 6	1,875
Nantucket	do	1862	Atlantic Works, Boston, Mass.	Southport, N. C., for use of naval militia.	200	46 0	11 6	1,875
Passaic	do	1862	John Ericsson, Brooklyn, N. Y.	Boston, Mass., for use of naval militia.	200	46 0	11 6	1,875
Wyandotte	do	1862	Miles Greenwood, Cincinnati, Ohio.	For use of naval militia, Connecticut.	225	43 8	13 6	2,100

States Navy—Continued.

TURRET MONITORS (IRON).

Type of engine.	Speed, in knots.	Batteries.		Armor.		Cost of hull and machinery.	Date of act authorizing building.
		Main.	Secondary.	Sides.	Turret.		
				In.	*In.*		
Single-screw grasshopper.	5 to 6	2 XV" S. B.	None	5	10	$626,582.24	Apr. 17, 1862
do	5 to 6	None	do	5	11	613,164.98	Do.
do	6	2 XV" S. B.	2 12-pdr. H.	5	10	622,963.22	Do.
do	6	do	None	5	11	427,766.78	Do.
do	5 to 6	do	do	5	11	422,766.73	Do.
do	5 to 6	do	do	5	11	422,726.28	Do.
do	6	do	do	5	10	635,374.55	Do.
do	6	do	do	5	10	628,879.27	Do.
do	5 to 6	do	do	5	11	423,027.49	Do.
do	5 to 6	do	do	5	11	413,515.14	Do.
do	5 to 7	do	do	5	11	408,091.37	Do.
do	5 to 6	do		5	11	423,171.69	Do.
do	6	do		5	10	633,327.84	Do.

Table of vessels of th

UNA

Name.	Type.	Rig.	By whom and where built or building.	Condi ser
Atlanta	Protected cruiser	Brig	John Roach & Sons, Chester, Pa.	In ord navy N. Y.
Baltimore	do	Two military masts.	Wm. Cramp & Sons, Philadelphia, Pa.	Flagshi atic s
Boston	do	Brig	John Roach & Sons, Chester, Pa.	Repairi Mare Cal.
Charleston	do	Two military masts.	Union Iron Works, San Francisco, Cal.	Asiatic
Chicago	do	Bark	John Roach & Sons, Chester, Pa.	Repai New Navy
Cincinnati	do	Two-masted schooner.	U. S. navy-yard, Brooklyn, N. Y.	North static
Columbia	do	do	Wm. Cramp & Sons, Philadelphia, Pa.	do
Detroit	Cruiser	do	Columbian Iron Works, Baltimore, Md.	Asiatic
Marblehead	do	do	City Point Works, Boston, Mass.	Europe tion.
Montgomery	do	do	Columbian Iron Works, Baltimore, Md.	North static
Minneapolis	Protected cruiser	do	Wm. Cramp & Sons, Philadelphia, Pa.	do
Newark	do	Bark	Wm. Cramp & Sons, Philadelphia, Pa.	Flagshi Atla tion.
Olympia	do	Two-masted schooner.	Union Iron Works, San Francisco, Cal.	Asiatic
Philadelphia	do	Two-masted schooner.	Wm. Cramp & Sons, Philadelphia, Pa.	Flagshi fic st
Raleigh	do	Two-masted schooner.	U. S. navy-yard, Norfolk, Va.	North static
San Francisco	do	Three-masted schooner.	Union Iron Works, San Francisco, Cal.	Flagshi pean

* To have new machinery, modern battery, and different rig.

ary—Continued.

VESSELS.

ly equipped ready all stores on board. al coal supply. Extreme breadth.	Mean draft.	Displacement.	Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft and displacement.	Normal coal supply.	Bunker capacity.	Maximum draft at lowest point of keel. Ship ready for sea, bunkers full.
Ft. In.	*Ft. In.*	*Tons.*					*Tons.*	*Tons.*	*Ft. In.*
42 1¾	16 10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	490	21 0¾
48 7½	19 6	4,413	Twin screw horizontal triple expansion.	20.096	10,064	25.89	400	1,143.87	23 11½
42 1¾	16 10	3,000	Single screw horizontal compound.	15.60	4,030	20.03	.....	495.80	21 0¾
46 2	18 7	3,730	Twin screw horizontal compound.	18.20	6,666	23	328	757.70	21 8½
48 2	19 0	4,500	Twin screw compound, overhead beam.	15.10	5,084	26.92	.....	831.94	22 6½
42 0	18 0	3 213	Twin screw vertical triple expansion.	19	10,000	20.04	350	460.09	20 2½
58 2¼	22 6½	7,375	Triple screw vertical triple expansion.	22.8	18,509	36.87	750	1,670	25 7
37 0	14 7	2,089	Twin screw vertical triple expansion.	18.71	5,227	15.75	200	340	16 8
37 0	14 7	2,089	.....do.....	18.44	5,451	15.75	200	340	16 8
37 0	14 7	2,089	.....do.....	19.05	5,580	15.75	200	340	16 8
58 2¼	22 6½	7,375	Triple screw vertical triple expansion.	23.073	20,862	36.87	750	1,670	25 7
49 2	18 9	4,098	Twin screw horizontal triple expansion.	19	8,869	25	400	809.46	22 7½
53 0⅝	21 6	5,870	Twin screw vertical triple expansion.	21.686	17,313	29.36	400	1,169.66	24 9¾
48 7½	19 2½	4,324	Twin screw horizontal triple expansion.	19.678	8,815	25.89	400	1,085.6	23 5
42 0	18 0	3,213	Twin screw vertical triple expansion.	19	10,000	20.04	350	460.09	20 2½
49 2	18 9	4,098	Twin screw horizontal triple expansion.	19.525	9,913	25	350	627.76	22 3½

Table of vessels of the U

UNARMORED S

Name.	Batteries.			Protective de	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Fl
PROTECTED CRUISERS.				*Inches.*	*Inch*
Atlanta	6 6″ B. L. R. 2 8″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 4 1-pdr. R. F 2 47mm H. R. C 2 Gatlings	.....	1½	
Baltimore	4 8″ B. L. R. 6 6″ B. L. R.	4 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 4 37mm H. R. C 2 Gatlings	†4	4	
Boston	6 6″ B. L. R. 2 8″ B. L. R.	2 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 2 47mm H. R. C 2 37mm H. R. C 2 Gatlings	.....	1½	
Charleston	2 8″ B. L. R. 6 6″ B. L. R.	4 6-pdr. R. F 2 3-pdr. R. F 2 1-pdr. R. F 4 37mm H. R. C 2 Gatlings	†4	3	
Chicago	4 8″ B. L. R 8 6″ B. L. R 2 5″ B. L. R	9 6-pdr. R. F 4 1-pdr. R. F 2 37mm H. R. C 2 Gatlings	.....	1½	
Cincinnati	10 5″ R. F. guns 1 6″ R. F. gun	8 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	4	2½	
Columbia	1 8″ B. L. R 2 6″ R. F. guns 8 4″ R. F. guns	12 6-pdr. R. F 4 1-pdr. R. F 4 Gatlings	4	4	
CRUISERS.					
Detroit	9 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 1 Gatling	3	7/16	
Marblehead	9 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	3	7/16	
Montgomery	9 5″ R. F. guns	6 6-pdr. R. F 2 1-pdr. R. F 2 Gatlings	3	7/16	
PROTECTED CRUISERS.					
Minneapolis	1 8″ B. L. R 2 6″ R. F. guns 8 4″ R. F. guns	12 6-pdr. R. F 4 1-pdr. R. F 4 Gatlings	4	4	
Newark	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 4 37mm H. R. C 4 Gatlings	†6	3	
Olympia	10 5″ R. F. guns 4 8″ B. L. R.	14 6-pdr. R. F 6 1-pdr. R. F 4 Gatlings	6	4¾	
Philadelphia	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 2 1-pdr. R. F 3 37mm H. R. C 4 Gatlings	†4	*4	
Raleigh	10 5″ R. F. guns 1 6″ R. F. guns	8 6-pdr. R. F 4 1-pdr. R. F 2 Gatlings	4	2½	
San Francisco	12 6″ B. L. R	4 6-pdr. R. F 4 3-pdr. R. F 2 1-pdr. R. F 3 37mm H. R. C 4 Gatlings	4	3	

* Contract price.

ates Navy—Continued.

ESSELS—Continued.

Complement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
19	265	* $617,000	Mar. 3, 1883	July 23, 1883	Nov. 8, 1883	Jan. 23, 1885	July 19, 1886
36	350	* 1,325,000	Aug. 3, 1886	Dec. 17, 1886	May 5, 1887	June 17, 1888	Jan. 7, 1890
19	265	* 619,000	Mar. 3, 1883	July 23, 1883	Nov. 15, 1883	Jan. 23, 1885	May 2, 1887
20	280	* 1,017,500	Mar. 3, 1885	Dec. 28, 1886	Jan. 20, 1887	June 28, 1888	Dec. 26, 1889
33	376	* 889,000	Mar. 3, 1883	July 26, 1883	Dec. 29, 1883	Jan. 26, 1885	Apr. 17, 1889
20	292	‡ 1,100,000	Sept. 7, 1888	.....	Jan., 1890	.....	June 16, 1894
.....	429	* 2,725,000	June 30, 1890	Nov. 19, 1890	Dec. 30, 1890	May 19, 1893	Apr. 23, 1894
20	254	* 612,500	Sept. 7, 1888	Nov. 2, 1889	Feb., 1890	May 2, 1892	July 20, 1893
20	254	* 674,000	Sept. 7, 1888	Nov. 11, 1889	Oct., 1890	May 11, 1892	Apr. 2, 1894
20	254	* 612,500	Sept. 7, 1888	Nov. 2, 1889	Feb., 1890	May 2, 1892	Feb. 28, 1894
.....	456	* 2,690,000	Mar. 2, 1891	Aug. 31, 1891	Dec. 16, 1891	Aug. 31, 1893	Dec. 13, 1894
34	350	* 1,248,000	Mar. 3, 1885	Oct. 27, 1887	June 12, 1888	Oct. 27, 1889	Feb. 2, 1891
.....	395	* 1,796,000	Sept. 7, 1888	July 10, 1890	June, 1891	Apr. 1, 1893	Feb. 5, 1895
34	350	* 1,350,000	Mar. 3, 1887	Oct. 27, 1887	Mar. 22, 1888	Oct. 27, 1889	July 28, 1890
20	292	‡ 1,100,000	Sept. 7, 1888	.....	Dec. 1889	.....	Apr. 17, 1894
33	350	* 1,428,000	Mar. 3, 1887	Oct. 26, 1887	Aug. 1888	Oct. 26, 1889	Nov. 15, 1890

† Port opening in ship, tubes not fitted. ‡ Limit of cost.

Table of vessels of the

UNARMORED

Name.	Type.	Rig.	By whom and where built or building.	Condit serv
GUNBOATS.				
Bennington	Gunboat	Three-masted schooner.	N. F. Palmer & Co., Chester, Pa.	Pacific st
Castine	do	Two-masted schooner.	Bath Iron Works, Bath, Me.	South A station
Concord	do	Three-masted schooner.	N. F. Palmer & Co., Chester, Pa.	Asiatic s
Helena	Light-draft gunboat	One military mast.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Machias	Gunboat	Two-masted schooner.	Bath Iron Works, Bath, Me.	Asiatic s
Nashville	Light-draft gunboat	Two-masted schooner, pole masts.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Petrel	Gunboat	Barkentine	Columbian Iron Works, Baltimore, Md.	Asiatic s
Wilmington	Light-draft gunboat	One military mast.	Newport News Shipbuilding and Dry Dock Co., Newport News, Va.	Building
Yorktown	Gunboat	Three-masted schooner.	Wm. Cramp & Sons, Philadelphia, Pa.	Asiatic s

UNARMORE

Gunboat No. 10	Composite gunboat	Barkentine	Contract not yet awarded.	
Gunboat No. 11	do	do	do	
Gunboat No. 12	do	do	do	
Gunboat No. 13	do	do	do	
Gunboat No. 14	do	Two-masted schooner.	do	
Gunboat No. 15	do	do	do	

States Navy—Continued.

VESSELS—Continued.

Ship fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horse-power.	Tons per inch immersion at normal draft and displacement.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
Length on load water line.	Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*					*Tons.*	*Tons.*	*Ft. In.*
220 0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	17.5	3,436	13.72	200	403	16 7
204 0	32 1½	12 0	1,177	Twin screw vertical triple expansion.	16.032	2,199	10.84	125	292.6	14 0
230 0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	16.8	3,405	13.72	200	401	16 7
250 9	40 1⅜	9 0	1,392	Twin screw vertical triple expansion.	13	1,600	17.08	100	279.73	9 9¾
204 0	32 1½	12 0	1,177	.....do.....	15.46	2,046	10.84	125	292.6	14 0
220 0	38 3	11 0	1,371	Twin screw vertical quadruple expansion.	14	1,750	13.16	150	399.31	12 7½
176 3	31 0	11 7	892	Single screw horizontal compound.	11.79	1,095	9.28	100	200	13 1
250 9	40 1⅜	9 0	1,392	Twin screw vertical triple expansion.	13	1,600	17.08	100	279.73	9 9¾
230 0	36 0	14 0	1,710	Twin screw horizontal triple expansion.	16.14	3,392	13.72	200	380	16 7

POSITE VESSELS.

168 0	36 0	12 0	1,000	Single screw vertical triple expansion.	12	800	10.75	100	238	13 1
168 0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
168 0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
168 0	36 0	12 0	1,000	.....do.....	12	800	10.75	100	238	13 1
174 0	34 0	12 0	1,000	Twin screw vertical triple expansion.	12	800	10.17	120	250	13 1¼
174 0	34 0	12 0	1,000	.....do.....	12	800	10.17	120	250	13 1¼

Table of vessels of the Un

UNARMORED ST

Name.	Batteries.			Protective de	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Fla
GUNBOATS.				*Inch*	*Inch*
Bennington	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	⅜	
Castine	8 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	*1	⅜	
Concord	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	⅜*	
Helena	8 4″ R. F. guns	4 6-pdr. R. F. G. 4 1-pdr. R. F. G. 2 Gatlings	1	⅜	
Machias	8 4″ R. F. guns	4 6-pdr. R. F. 2 1-pdr. R. F.	*1	⅜	
Nashville	8 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G. 2 Gatlings	1	⅜	
Petrel	4 6″ B. L. R.	2 3-pdr. R. F. 1 1-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	.....	⅜	
Wilmington	8 4″ R. F. guns	4 6-pdr. R. F. G. 4 1-pdr. R. F. G. 2 Gatlings	.....	⅜	
Yorktown	6 6″ B. L. R.	2 6-pdr. R. F. 2 3-pdr. R. F. 1 1-pdr. R. F. 2 37mm H. R. C. 2 Gatlings	*6	⅜	
				UNARMORED CO	
Gunboat 10	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....
Gunboat 11	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....
Gunboat 12	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....
Gunboat 13	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....
Gunboat 14	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....
Gunboat 15	6 4″ R. F. guns	4 6-pdr. R. F. G. 2 1-pdr. R. F. G.	.....	.....	.....

* Port opening in ship; tubes not fitted.

ates Navy—Continued.

ESSELS—Continued.

Complement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
16	181	†$490,000	Mar. 3, 1887	Nov. 15, 1887	June, 1888	May 15, 1889	June 20, 1891
11	143	†318,500	Mar. 2, 1889	Apr. 12, 1890	Feb., 1891	Apr. 12, 1892	Oct. 16, 1893
13	180	†490,000	Mar. 3, 1887	Nov. 15, 1887	May, 1888	May 15, 1889	Feb. 14, 1891
10	160	†280,000	Mar. 3, 1893	Jan. 29, 1894	Oct. 11, 1894	Jan. 29, 1896	.....
11	143	†318,560	Mar. 2, 1889	Apr. 12, 1890	Feb. 1891	Apr. 12, 1892	July 20, 1893
11	158	†280,000	Mar. 3, 1893	Jan. 22, 1894	Aug. 9, 1894	Jan. 22, 1896	.....
10	122	†247,000	Mar. 3, 1885	Dec. 22, 1886	Aug. 27, 1887	Dec. 22, 1887	Dec. 10, 1889
10	160	†280,000	Mar. 3, 1893	Jan. 29, 1894	Oct. 8, 1894	Jan. 29, 1896	.....
14	178	†455,000	Mar. 3, 1885	Jan. 31, 1887	May 14, 1887	Jan. 31, 1888	Apr. 23, 1889
OSITE VESSELS.							
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....
11	135	.....	Mar. 2, 1895	.....	.....	.....	.....

† Contract price.

Table of vessels of the U

UNARMORED ST

Name.	Type.	Rig.	By whom and where built or building.	Condition o service.
SPECIAL CLASS.				
Bancroft	For naval cadets	Barkentine	Moore & Sons, Elizabethport, N. J.	Cadet practi ship.
Dolphin	Despatch boat	Three-masted schooner.	John Roach & Sons, Chester, Pa.	Special servic
Vesuvius	Dynamite cruiser		Wm. Cramp & Sons, Philadelphia, Pa.	In ordinar League I land, Pa.
Torpedo cruiser				Subject to ders from t Departmen
TORPEDO BOATS.				
Cushing	Steel torpedo boat		Herreschoff M'f'g Co., Bristol, R. I.	Special servic
Ericsson	Steel torpedo boat		Iowa Iron Works, Dubuque, Iowa.	Awaiting co missions.
Stiletto	Wood torpedo boat		Purchased from Herreschoff M'f'g Co.	Torpedo pra tice, Newpo R. I.
Torpedo boat No. 3.	Steel torpedo boat		Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 4.	Steel torpedo boat		Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 5.	Steel torpedo boat		Columbian Iron Works, Baltimore, Md.	Building
Torpedo boat No. 6.	Steel torpedo boat		Herreschoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 7.	Steel torpedo boat		Herreschoff M'f'g Co., Bristol, R. I.	Building
Torpedo boat No. 8.	Steel torpedo boat		Moran Brothers' Co., Seattle, Wash.	Building
Submarine torpedo boat.	Steel torpedo boat		Columbian Iron Works, Baltimore, Md.*	Building

* Contractors, John P. Holland Torpedo Boat Co., New York, N. Y.

States Navy—Continued.

VESSELS—Continued.

Ship fully equipped ready for sea, all stores on board. Normal coal supply.				Type of engine.	Speed in knots per hour.	Maximum indicated horsepower.	Tons per inch immersion at normal draft and displacement.	Normal coal supply.	Bunker capacity.	Maximum draft aft at lowest point of keel. Ship ready for sea, bunkers full.
Length on load water line.	Extreme breadth.	Mean draft.	Displacement.							
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*					*Tons.*	*Tons.*	*Ft. In.*
187 6	32 0	12 2	839	Twin screw vertical triple expansion.	14.37	1,213	9.52	100	203	12 11
240 0	32 0	14 3	1,486	Single screw vertical compound.	15.50	2,253	13.31	.....	273.74	17 1⅛
252 4	26 6¾	10 7½	929	Twin screw vertical triple expansion.	21.42	3,794.86	10.65	.....	152.2	11 2½
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
138 9	14 3	4 10¾	105	Twin screw vertical quadruple expansion.	22.5	1,720	3.10	.....	36	5 6
149 7	15 6	4 9	120	.....do.....	24	1,800	3.56	9	35.40	5 6½
88 6	11 0	3 0	31	Single screw vertical.	18.22	359	.....	.....	.....	.....
160 0	16 0¾	5 0	142	Twin screw vertical quadruple expansion.	24.5	2,000	4.07	9	42	5 8
160 0	16 0¾	5 0	142	.....do.....	24.5	2,000	4.07	9	42	5 8
160 0	16 0¾	5 0	142	Twin screw vertical quadruple expansion.	24.5	2,000	4.07	9	42	5 8
175 0	17 0	5 6	.....	.....do.....	27.5	.....	.....	.....	.....	.....
175 0	17 0	5 6	.....	.....do.....	27.5	.....	.....	.....	.....	.....
170 0	17 0	5 6	182	.....do.....	26.0	3,200	4.65	12	60	6 6½
†85 3	11 6	.....	168	‡Twin screw triple expansion.	8.0	1,200§	.....	.....	.....	.....

† Length over all.
‡ Also single screw operated by storage cells to supply an electric motor to propel the vessel when completely submerged at a speed of 8 knots for 6 hours.
§ Indicated horsepower for 15 knots in light condition.

Table of vessels of the U

UNARMORED S

Name.	Batteries.			Protective de	
	Main.	Secondary.	Torpedo tubes.	Slopes.	Fl
SPECIAL CLASS.					
Barcroft	4 4" R. F. guns	2 6-pdr. R. F. 2 3-pdr. R. F. 1 1-pdr. R. F. 1 37mm H. R. C. 1 Gatling	2	$\frac{3}{16}$	
Dolphin	2 4" R. F. guns	2 6-pdr. R. F. 2 47mm H. R. C. 2 Gatlings			
Vesuvius	3 dynamite guns, 15" cal.	3 3-pdr. R. F.		$\frac{3}{16}$	
Torpedo cruiser					
TORPEDO BOATS.					
Cushing		3 1-pdr. R. F	3 18" Whitehead.		
Ericsson		3 1-pdr. R. F	3 18" Whitehead.		
Stiletto					
Torpedo boat No. 3		3 1-pdr. R. F	3 18" Whitehead.		
Torpedo boat No. 4		3 1-pdr. R. F	3 18" Whitehead.		
Torpedo boat No. 5		3 1-pdr. R. F	3 18" Whitehead.		
Torpedo boat No. 6		4 1-pdr. R. F	3 18" Whitehead.		
Torpedo boat No. 7		4 1-pdr. R. F	3 18" Whitehead.		
Torpedo boat No. 8		4 1-pdr. R. F	3 18" Whitehead.		
Submarine torpedo boat			2		

States Navy—Continued.

VESSELS—Continued.

Complement.		Cost of hull and machinery.	Date of act authorizing the building.	Contract signed.	Keel laid.	Contract date of completion.	Date of first commission.
Officers.	Men.						
10	120	* $250,000	Sept. 7, 1888	July 18, 1890	Feb., 1891	July 18, 1892	Mar. 3, 1893
7	108	* 315,000	Mar. 3, 1883	July 23, 1883	Oct. 11, 1883	July 23, 1884	Dec. 8, 1885
6	64	* 350,000	Aug. 3, 1886	Feb. 11, 1887	Sept., 1887	Feb. 11, 1888	June 7, 1890
.....	.....	.....	.....	.....	.....	.....	.....
3	20	* 82,750	Aug. 3, 1886	Mar. 1, 1888	Apr., 1888	June 1, 1889	Apr. 22, 1890
3	20	* 113,500	June 30, 1890	Oct. 8, 1891	July 21, 1892	Oct. 8, 1892	.....
.....	.....	† 25,000	.....	.....	.....	.....	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	.....	Aug. 3, 1896	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	.....	Aug. 3, 1896	.....
4	16	* 97,500	July 26, 1894	May 3, 1895	.....	Aug. 3, 1896	.....
4	20	* 144,000	Mar. 2, 1895	.....	.....	.....	.....
4	20	* 144,000	Mar. 2, 1895	.....	.....	.....	.....
4	20	* 160,000	Mar. 2, 1895	.....	.....	.....	.....
.....	.....	* 150,000	Mar. 3, 1893	Mar. 13, 1895	.....	Mar. 13, 1896	.....

* Contract price. † Limit of cost.

Table of vessels of the U

IRON AND WOO

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
IRON.					
Alarm	1874	New York, N. Y.	United States	In ordinary at navy-yard, New York.	
Alert	1873-1875	Chester, Pa	John Roach	Pacific station	Bark
Monocacy	1863	Baltimore, Md	A. & W. Denmead & Son.	Asiatic station	Schoon
Michigan	1844	Erie, Pa	United States	Special service, Northwestern Lakes.	Barken
Pinta	1865	Chester, Pa	Reany, Son & Archbold.	Special service, Alaska.	Schoon
Ranger	1873-1876	Wilmington, Del.	Harlan & Hollingsworth.	Pacific station	Bark
WOODEN.					
Adams	1874-1876	Boston, Mass.	United States and Donald McKay.	Repairing at Mare Island, Cal.	do
Alliance	1873-1876	Norfolk, Va.	United States	Training service	do
Enterprise	1873-1876	Kittery, Me.	John W. Griffith and United States.	Public marine school, Boston, Mass.	do
Essex	1874-1876	Kittery and Boston.	United States and Donald McKay.	Training service	do
Hartford‡	1858	Boston, Mass.	United States	Rebuilding, Mare Island, Cal.	do
Lancaster	1858	Philadelphia, Pa.	do	Gunnery training ship.	Ship
Marion	1871-1875	Kittery, Me.	do	Pacific station	Bark
Mohican	1872-1883	Mare Island, Cal.	do	In ordinary, Mare Island, Cal.	do
Thetis		Dundee, Scotland	Alex. Stevens & Sons.	Special service	do
Yantic	1864	Philadelphia, Pa.	United States	South Atlantic station.	do

* Anthracite.

States Navy—Continued.

STEAM VESSELS.

Dimensions.			Displacement.	Indicated horsepower.	Speed in knots per hour.	Batteries.		Bunker capacity.	Complement.	
Length between perpendiculars.	Breadth.	Mean draft.				Main.	Secondary.		Officers.	Men.
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*					*Tons.*		
158 6	28 0	10 6	800	600	10	.....	.....	* 405	.....	.....
175 0	32 0	12 9	1,020	365	10	2 IX" S. B. 1 60-pdr. B. L. R	2 6-pdr. 2 37mm 1 Gatling	* 190	21	127
255 0	35 0	9 0	1,370	850	11.2	4 VIII" S. B. 2 60-pdr. B. L. R	1 3" B. L. H. 1 12-pdr. S. B. howtz 4 37mm H. R. C 2 47mm H. R. C. 2 Gatlings	† 224	12	114
163 3	27 1½	9 0	685	305	10.5	4 30-pdr. B. L. R	3 3" B. L. H 2 Gatlings	* 125	.....	.....
137.0	26 0	10 0	550	190	8.5	2 12-pdr. S. B. howtz	1 Gatling	* 111	8	37
175 0	32 0	12 9	1,020	365	10	2 IX" S. B 1 VIII" M. L. R. 1 60-pdr. B. L. R	1 3" B. L. H. 2 37mm H. R. C 1 Gatling	* 146	21	127
185 0	35 0	14 3	1,375	550	9.8	Battery landed	Battery landed	* 150	20	160
185 0	35 0	14 3	1,375	668	9.98	6 4" R. F. G	4 6-pdr. R. F. G 2 1-pdr. R. F. G	* 159	18	160
185 0	35 0	14 3	1,375	790	11.4	4 32-pdr	2 3" B. L. H	* 130	.....	.....
185 0	35 0	14 3	1,375	505	10.4	6 4" R. F. G	4 6-pdr. R. F. G 2 1-pdr. R. F. G	† 130	15	170
225 0	44 0	18 2	2,790	2,000	12	13 5" R. F. G	4 6-pdr. R. F. G 2 10-pdr. R. F. G	* 286	32	285
235 8	46 0	19 2	3,250	733	9.6	10 5" R. F. G 2 5" B. L. R	2 6-pdr. R. F 2 1-pdr. R. F 2 37mm H. R. C 4 Gatlings	* 326	.....	.....
216 0	37 0	16 6	1,900	753	11.25	Battery landed	Battery landed	* 135	18	176
216 0	37 0	16 6	1,900	613	10.65	8 IX" S. B 1 8" M. L. R 1 60-pdr. B. L. R	1 3" B. L. H 2 20-pdr. B. L. R 2 37mm H. R. C. 1 Gatling	* 162	21	193
166 0	30 3	18 0	1,250	490	7.55	.....	1 53mm H. R. C	300	10	98
180 0	30 0	12 2	900	225	8.30	2 IX" S. B 1 8" M. L. R 1 60-pdr. B. L. R	1 12-pdr. S. B. howtz 1 Gatling 1 3" B. L. H	* 130	20	134

‡ To be refitted with new machinery and modern battery. † Bituminous.

Table of vessels of the United

WOODEN SAILING

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
Constellation	1854	Norfolk, Va.	United States	Stationary training ship, Newport R. I.	Ship
Jamestown	1845	do	do	Hospital ship	do
Monongahela	1862	Philadelphia, Pa.	do	In ordinary, Annapolis, Md.	do
Portsmouth	1843	Kittery, Me.	do	For use of naval militia, New Jersey.	do
Saratoga	1842	do	do	Public Marine School, Philadelphia, Pa.	do
St. Mary's	1844	Washington, D.C.	do	Public Marine School, New York, N. Y.	do

Table of vessels of the United

STEEL, IRON, AND

Name.	Built.			Material.	Condition or service.	Rig.
	When.	Where.	By whom.			
Fortuno	1865	Boston	John Tetlow	Iron	To be repaired at Norfolk, Va.	Schooner
Iwana	1891	do	City Point Iron Works.	Steel	Yard tug, Boston, Mass.	
Leyden	1866	do	James Tetlow	Iron	Yard tug, Portsmouth, N. H.	Schooner
Narkeeta	1891	do	City Point Iron Works.	Steel	Yard tug, New York, N. Y	
Nina	1865	Chester	Reany, Son & Archbold.	Iron	Navy-yard, New York, N. Y.	Schooner
Rocket	1863		Purchased	Wood	Navy-yard, Boston, Mass.	
Standish	1865	Boston	James Tetlow	Iron	Being repaired at Norfolk, Va.	Schooner
Traffic	1891	South Brooklyn, N. Y.	D. McCarty	Wood	Navy-yard, New York.	Derrick mast.
Triton	1888	Camden, N.J.	John H. Dialogue.	Steel	Yard tug, Washington, D. C.	
Unadilla	1894	Mare Island, Cal.	Government	do	Building	Schooner
Wahneta	1891	Boston	City Point Iron Works.	do	Yard tug, Norfolk	
Tugboat No. 5	1895	Norfolk, Va.	Government	do	Building	

States Navy—Continued.

VESSELS.

Dimensions.			Displacement.	Batteries.		Complement.	
Length between perpendiculars.	Breadth.	Mean draft.		Main.	Secondary.	Officers.	Men.
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*				
176 0	42 0	20 0	1,186	8 VIII" S. B.	2 20-pdr. B. L. R.	15	203
163 6	36 0	16 0	1,150				
223 0	38 0	16 6	2,100	4 VIII" S. B.	1 3" B. L. R 2 6-pdr. R. F. G 4 37mm H. R. C	21	380
153 0	38 3	16 6	1,125	11 VIII" S. B. 1 60-pdr. B. L. R		15	210
147 6	36 1	16 0	1,025				
150 0	37 6	15 6	1,025				

States Navy—Continued.

WOODEN STEAM TUGS.

Dimensions.			Displacement.	Indicated horse-power.	Speed in knots.	Coal capacity.	Cost of hull and machinery.	Date of act authorizing building.	Contract signed.	Contract date of completion.
Length between perpendiculars.	Breadth.	Mean draft.								
Ft. In.	*Ft. In.*	*Ft. In.*	*Tons.*			*Tons*				
137 0	26 0	9 6	450	340	10	80				
92 6	20 11⅛	8 0	192.4	300	11.5	35	* $32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
137 0	26 0	9 6	450	340	10	80				
92 6	20 11⅛	8 0	192.4	300	11.5	35	* 32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
137 0	26 0	8 6	357	388	11.12	80				
85 8	18 10	7 0	187	147	8.5					
137 0	26 0	9 6	450	340	10	80				
106 0	29 4	9 0	280		10					
96 0	26 9	9 0	212	300	13	45				
110 0	25 0	9 6½	345	500	12	65	† 80,000	July 26, 1894		
92 6	20 11⅛	8 0	192.4	300	11.5	35	* 32,438	Mar. 2, 1889	Dec. 20, 1890	Dec. 20, 1891
‡96 9	21 0	8 6½	225	450	12	30	† 25,000	Mar. 2, 1895		

* Contract prices. † Appropriated. ‡ Length on load water line.

Table of vessels of the United

WOODEN STEAM VESSELS

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
Franklin	1855-1865	Kittery, Me.	United States	Receiving ship, Norfolk, Va.	Housed over
Iroquois	1858	New York, N. Y.	do	Transferred to Marine Hospital Service.	Bark
Minnesota	1855	Washington, D. C.	do	For use of naval militia, Massachusetts.	Housed over
Nipsic	1873-1879	do	do	Naval station, Puget Sound.	Bark
Omaha	1867-1869	Philadelphia, Pa.	do	Transferred to Marine Hospital Service.	do
Pensacola	1858-1862	Pensacola, Fla.	do	In ordinary at navy-yard, Mare Island.	Ship
Richmond	1858	Norfolk, Va.	do	Receiving ship, navy-yard, League Island, Pa.	do
Swatara	1872	New York, N. Y.	do	In ordinary at navy-yard, Mare Island.	Bark
Wabash	1854	Philadelphia, Pa.	do	Receiving ship, Boston, Mass.	Housed over

Table of vessels of the

WOODEN SAILING VESSELS

Name.	Built.			Condition or service.	Rig.
	When.	Where.	By whom.		
Constitution	1797	Boston, Mass.	United States	In ordinary, navy-yard, Portsmouth, N. H.	Housed over
Dale	1839	Philadelphia, Pa.	do	For use of naval militia, Baltimore, Md.	do
Independence	1837	Boston, Mass.	do	Receiving ship, Mare Island, Cal.	do
New Hampshire.	1818	Kittery, Me.	do	For use of naval militia, New York, N. Y.	Ship
St. Louis	1828	Washington, D. C.	do	For use of naval militia, Philadelphia, Pa.	Housed over
Vermont	1818	Boston, Mass.	do	Receiving ship, New York, N. Y.	do

ıvy—Continued.

'OR SEA SERVICE.

nsions.					Batteries.			Comple-ment.	
Breadth.	Mean draft.	Displacement.	Indicated horsepower.	Speed in knots per hour.	Main.	Secondary.	Coal capacity.	Officers.	Men.
t. In.	Ft. In.	Tons.					Tons.		
1 3	24 3	5,170	1,050	9	4 IX" S. B.	1 12-pdr. S. B. howtz			
3 10	15 3	1,575	1,202	10.7	Battery landed	Battery landed	†128		
1 4	23 0	4,700	1,000	9.25	8 IX" S. B. 1 60-pdr. B. L. R.	2 3" B. L. H. 2 20-pdr. B. L. R. 3 12-pdr. S. B. howtz			
5 0	14 3	1,375	839	10.7	4 IX"		*132		
3 0	16 6	2,400	953	11.3	Battery landed	Battery landed			
1 6	18 7	3,000	680	9	do	do	†285		
2 6	17 4½	2,700	692	9.5	12 IX" S. B. 1 8" M. L. R. 1 60-pdr. B. L. R.	2 20-pdr. B. L. R. 1 3" B. L. R 2 37mm H. R. C. 1 Gatling	*265	29	321
7 0	16 6	1,900	680	10.1	Battery landed	Battery landed			
1 4	23 0	4,650	950	9.15		2 20-pdr. B. L. R. 2 12-pdr. S. B. howtz			

'tates Navy—Continued.

'OR SEA SERVICE.

Dimensions.			Batteries.	
Breadth.	Mean draft.	Displacement.	Main.	Secondary.
Ft. In.	Ft. In.	Tons.		
45 0	20 0	2,200	4 32-pdr. S. B	1 12-pdr. S. B. howtz.
33 10	14 9	675		
51 6	21 6	3,270	6 32-pdr. S. B	3 12-pdr. S. B. (light). 1 12-pdr. S. B. (heavy). 1 3" B. L. H.
53 0	25 6	4,150		
32 8	15 6	830		
53 0	25 6	4,150	1 6" B. L. R.	1 6-pdr. R. F. G. 1 3-pdr. R. F. G. 1 1-pdr. R. F. G. 1 37mm H. R. C. 9 12-pdr. S. B. H.

* Bituminous. † Anthracite.

Reports from naval constructors showing condition of work on vessels under construction on July 1, 1895.

The following reports were submitted in compliance with orders from this Bureau, and show the condition of work on July 1, 1895, on vessels building at navy-yards and private establishments:

NAVY-YARD, NEW YORK, *July 12, 1895.*

SIR: In compliance with paragraph 4 of the Bureau of Construction and Repair letter No. 7400-95, of June 7, 1895, I have to submit report of the construction work done upon each ship under construction at this yard from July 1, 1894, to June 30, 1895, inclusive. There is also appended, in compliance with paragraph 5 of the same letter, a tabulated statement giving each vessel upon which repair work was done during the year, the information called for therein.

Very respectfully,

F. L. FERNALD,
Naval Constructor, U. S. N.

The COMMANDANT, NAVY-YARD, NEW YORK.

Statement showing the vessels on which repair work has been ordered between July 1, 1894, and June 30, 1895.

	Work ordered.	Work begun.	Work completed.	Progress in tenths.	Estimated date of completion.
U. S. S. Cincinnati	July 6, 1894	July 7, 1894	.....	0.4	July 27, 1895
U. S. S. Machias	Dec. 23, 1893	Dec. 28, 1893	Dec. 7, 1894	.....	.....
U. S. S. Castine	Feb. 2, 1894	Feb. 8, 1894	Jan. 31, 1895	.....	.....
U. S. S. New York	July 9, 1894	July 10, 1894	May 21, 1895	.....	.....
U. S. S. Columbia	Oct. 16, 1894	Oct. 16, 1894	.....do	.....	.....
U. S. S. Minneapolis	Feb. 4, 1895	Feb. 4, 1895	Feb. 15, 1895	.....	.....
U. S. S. Bancroft	July 21, 1894	July 21, 1894	July 26, 1894	.....	.....
U. S. S. San Francisco	July 2, 1894	July 3, 1894	Jan. 4, 1895	.....	.....
U. S. S. Lancaster	July 17, 1894	July 19, 1894	.....	.5	Aug. 16, 1895
U. S. S. Minnesota	Jan. 15, 1895	Jan. 16, 1895	May 9, 1895	.....	.....
U. S. S. Miantonomoh	June 9, 1894	June 13, 1894	Nov. 5, 1894	.....	.....
U. S. S. Nina	Dec. 2, 1893	July 11, 1894	Apr. 11, 1895	.....	.....
U. S. S. Fern	June 18, 1894	July 18, 1894	May 22, 1895	.....	.....
U. S. S. Traffic	July 5, 1894	July 5, 1894	Mar. 1, 1895	.....	.....
U. S. S. Vesuvius	July 23, 1894	July 30, 1894	Apr. 3, 1895	.....	.....
U. S. S. Vermont	July 5, 1894	July 7, 1894	June 11, 1895	.....	.....
U. S. S. Atlanta	June 26, 1895	June 25, 1895	June 28, 1895	.....	.....
U. S. S. Narkeeta	July 30, 1894	July 31, 1894	June 30, 1895	.....	.....
U. S. S. Dolphin	Oct. 2, 1894	Oct. 2, 1894	.....	.5	(*)
U. S. S. Portsmouth	Feb. 27, 1895	Feb. 28, 1895	June 29, 1895	.....	.....
U. S. S. Alliance	Mar. 28, 1895	Mar. 28, 1895	Apr. 6, 1895	.....	.....
U. S. S. Chicago	May 27, 1895	May 27, 1895	.....	.....	Dec. —, 1895
U. S. S. Essex	June 20, 1895	June 22, 1895	.....	.2	July 15, 1895

* Six days, when ship is available.

MAINE.

Work completed or advanced during the year.—Side and barbette conning-tower armors; life buoys; eyebolts for davit guys; anchor chains, hawse bucklers, etc.; fittings for sheet and bower anchors; torpedo ports; gun-port shutters; accommodation ladders; voice-tube system; storeroom fittings; steering gear; water-tight doors; armored hatches; framing; flushing and drainage system; ventilation system; engine and boiler room gratings; joiner work; awning stanchions and guard rails; roller paths and rollers for turrets; boat cranes; skylights between forward and amidship superstructure; chart house; hatch canopy and fittings; workshop and wash-room fittings; mess lockers; cement outside; completing furniture, blocks, cooperage, and boats; berth-deck planing; change in arrangement of C. M. projectors; support for switch board; painting of bottom with international composition; cleaning bottom; 6-inch ammunition hoist; light boxes; drilling for installation of oil lamps; ground chains fitted; changed upright grating; counterweights for hatches of protective deck fitted; iron stanchions under hand-steering wheel replaced; fitting gallery around conning tower; battery closet, trays, workbench, and transformer shelf in dynamo room; removed joiner work around ventilators of chart house; change in clearance arc of 6-inch gun; fitted ventilator shaft to engine room; filled cofferdams around engine room; cut additional door in after bulkhead of port engine room; enlarged

atches to lower chain locker, and fitted same with water-tight coamings and cowls; itted eyebolts in heads of anchor davits for fixed pennants; fitted bolster over ram plates; electric fan for steering engine room; painting bottom; changed location of atch on forward berth deck; ditty-boxes for crew; change in ventilator; fitting toreroom in forward compartment on berth deck; fitting storeroom for ordnance and utting door in bulkhead; certain changes in track for transporting 10-inch shell from hell room to turret loading room; changes in stowage arrangement of magazines; lteration in running the hydraulic piping to central columns of turrets; completed wo additional ammunition hoists; filled cofferdams with cellulose; replaced 3-inch olding with 2½-inch molding and ¾-inch tubes from mainmast to after search light latform; 12-foot punt; 14-foot dinghy; seating for manipulating valve gear in turrets.

The *Maine* is practically completed. She will be ready for commissioning about he 1st of August.

PURITAN.

Work completed or advanced during the year.—Framing and plating of superstructure; joiner work in superstructure; flushing and drainage system; ventilating system; steering gear; roller paths; rollers for turrets; base of turrets; berth-deck lanking; replacing boats transferred to other boats; painting bottom; spar work nd booms; new covers to manhole plates and fit manholes in fire rooms, engine oom, and shaft alley with angle-iron coaming; reinstalling dynamo plant; altering entilating trunk, superstructure deck, including cowls; cutting and fitting door in onning-tower support; cutting and fitting additional hatch in superstructure deck.

It is estimated that 92 per cent of the work is completed, based upon the final completion of the vessel and outfit ready for sea. The ship will be completed and ready or trial or service five months after receipt of forward turret armor and conning ower.

TERROR.

Work completed or advanced during the year.—Side armor; chain pipes; framing and lating for manhole covers; magazine and stateroom fittings; flushing and drainge system; voice tubes; mast boom; boat davits; hatch coamings and gratings; ain and berth deck planking; deck lights; coaling scuttle; water-tight doors; iner work; replacing boats transferred to other ships; completing blocks and furiture; removing molding, etc., under superstructure; altering lightening holes in ulkheads of sighting station in turrets; drilling two holes in top of turrets; installg deck circles for 1-pounder; moved roof beams forward turret; gypsy fitted to indlass; alterations in waterclosets and bathrooms of ward-room officers and of e galley; spar work and booms; enlarging paymaster's office; cut holes through ck for suction and discharge pipes of circulating pumps of air compressor; altering and rail in dynamo room; changing location of forward search light.

It is estimated that 98 per cent of the work is completed, based upon the final completion of the vessel and outfit for sea. The ship will be completed and ready for ial or service by November 1, 1895.

UNITED STATES NAVY-YARD,
Norfolk, Va., July 6, 1895.

SIR: In compliance with instructions from the Bureau of Construction and Repair, dated June 7, 1895, No. 7400-95, I have the honor to ubmit the following report, showing—

(1) Description of the work done on the *Texas*, *Amphitrite*, and *Raleigh* from July 1, 1894, to June 30, 1895, inclusive, the condition of he work at the latter date, and the estimated date of readiness for rial.

(2) Tabular statement giving information as to repair work done at his yard from July 1, 1894, to June 30, 1895, inclusive.

Three photographic views of the *Texas*, taken June 29, 1895, are forarded herewith. Negatives will be forwarded immediately.

U. S. S. TEXAS.

Items completed on or before July 1, 1894—Keel, stem and ram, sternpost, rudder, haft tubes and struts, longitudinals, transverse frames, double reverse bars, water ourses, outside plating, diagonal armor bulkhead framing, backing and armored

redoubt, framing backing and armor, inner bottom, transverse bulkheads, coal bunkers and fore and aft bulkheads, hydraulic room, engine and boiler bearers, shaft bearers, sluice valves, manholes, water-tight scuttles, sounding tubes, tests of water-tight compartments, deck beams to flying deck, upper deck, main deck, protective deck, lower deck and platform deck; deck plating and stringers of flying deck, upper deck, main deck, protective deck, lower deck and platform deck; deck planking, mast and capstan partners, mast steps, bilge keels, air ports, armored ammunition tubes for turret guns, draft of water figures, prisons, manger, steam steering engine, steering wheels and stanchions, capstan, windlass and fittings, wire-cable nippers, anchor davits, cable bitts, hawse pipes and stern mooring pipes, bow stoppers and all anchor gear, deck pipes, chain pipes, ensign and jack staffs, towing and warping bitts, sea steps, coaling scuttles and ports, coal chutes between decks, warping pipes, heeling ship after launch, zinc protectors, cementing, air locks, intercostal longitudinals under boilers, covers to engine-room ventilating trunks, chain lockers, bow and stern torpedo fittings, admiral's bath, air chutes and trolley rails, hammock hooks and watch bell, backing of side armor in place, calked and painted; armored redoubt, turrets, tracks, racks, and clip rings secured; turrets placed in ship, backing fitted and armor secured, portholes fitted, splinter plates fitted, backing bolts, aprons and securing chains fitted, hammock berthing, hatch coamings, passing scuttles, 6-inch and secondary ammunition rooms, water-tight doors, sluice valves, canopies, guard rails and stanchions, water tanks, scuppers and discharge pipes, cofferdams complete with covers, companion ladders and sea steps on both sides, hatch cranes and swinging booms.

Work done during year.	Condition June 30, 1895.
Side armor fitted in place	Completed excepting straps in top edges.
Ammunition hoists	Construction work completed; ordnance work nearly completed.
Deck planking	Completed.
Conning tower and shield	Put on board and being secured.
Chart house and flying bridge: Finished as far as practicable in shops; it can not be erected until conning tower is secured.	Chart house eight-tenths complete; flying bridge, eight-tenths complete; waiting for completion of conning tower.
Steering apparatus: Finished excepting work to be done in chart house, which is waiting on the completion of work in conning tower.	Nine-tenths completed.
Gun fittings	Completed.
Central passage	Completed and electric wiring nine-tenths completed.
Electric-lighting plant	Nine-tenths completed.
Electric storeroom	Completed.
Ordinary doors	Do.
Torpedo tubes and fittings	Do.
Storerooms and fittings	Do.
Fresh-water system	Do.
Holes in bulkheads for engineer's pipes	Do.
Wash rooms, locker bath tubs, wash basins, etc	Do.
Oil tanks	Do.
Steam winches	Do.
Voice pipes	Nine-tenths completed, waiting for conning tower and pilot house.
Boat cradles for torpedo boats	Completed.
Ladders	Do.
Cementing, inside	Nine-tenths completed.
outside	Do.
Painting	Do.
Plumbing	Completed.
Label plates	Nine-tenths completed.
Boats:	
No. 1 torpedo boat	Do.
No. 2 torpedo boat	Completed.
Barge completed, but turned over to Minneapolis	Do.
New barge	Five-tenths completed.
Steam launch	Nine-tenths completed.
Gig	Completed.
One whale boat	Do.
Two cutters	Do.
One sailing launch	Do.
One dinghy	Do.
Bulkheads and fittings in officers' quarters	Do.
Furniture	Do.
Docking: Ship docked and bottom painted twice	Do.
Final drawings	Six-tenths completed.

Ninety-eight per cent of work completed based on final completion of vessel and outfit ready for sea.

Weights.

Department.	On board July 1, 1894.	Placed on board during year.	On board July 1, 1895.
	Pounds.	*Pounds.*	*Pounds.*
Construction and Repair	6,509,659	385,881	6,895,540
Steam Engineering	1,498,764	39,247	1,538,011
Equipment	46,046	62,273	108,319
Ordnance	1,761,072	1,117,939	2,879,011
Total	9,815,541	1,605,340	11,420,881

Draft of water July 1, 1895.

	Feet.	Inches.
Forward	17	10¾
Aft	21	5½
Mean	19	8¼

U. S. S. AMPHITRITE.

Items completed on or before July 1, 1894.—All work interfering with alterations removed, main deck armor plating with its shutters, hatches, and water-tight scuttles, berth-deck plating, transverse and fore and aft bulkheads, sluice valves, operating gear and marking, sounding tubes, chain lockers, stanchions, superstructure framing, deck beams, plating, stringers, tie plates, half beams and ledges, skid beams and hammock berthing, magazines and shell rooms with stowage trolleys, handling rooms, fixed ammunition rooms, passing scuttles, all deck planking, deck armor, fixed barbettes and armor, lower roller path and rollers, clip rings, conning tower, pilot house and bridge, armored smoke pipe and ventilators, armor bolts and wood backing, turret armor, 4-inch gun supports, rail mounts for 1-pounder guns on superstructure, ceiling in hold and storerooms, bridge, military mast and step, master-at-arms's locker, pantries with plumbing, cabin water-closet and bathroom, junior officers' lavatory, firemens' wash room, complete with lockers and plumbing, mess lockers for crew in place, mess tables and benches, hatch coamings and skylights, gratings and hatch covers, brass label plates, hose reels, running lights, ship's bell, deck lights, air ports, coal scuttles, water tanks, chain stoppers, hawse pipes, billboards, mooring and towing bitts, warping chocks, all ladders, hammock hooks, ash chutes, canopies, gratings, ensign and jack staffs, steam capstan, windlass and winch, windlass bed, steering apparatus, speaking tubes, ventilation of ship and coal bunkers, cooperage, figures for draft of water, water-tight doors, supports for 3 and 6-pounder guns, cementing, and all boats, officers' quarters, and all water-closets, drainage and fire main, and ventilating system.

Work done during year.	Condition June 30, 1895.
Turret aprons fitted, turret machinery and mechanism fitted in place, and gun mounts and guns secured in place	Completed.
All storerooms	Do.
Armory	Do.
Lamp room	Do.
Brass label plates	Do.
Life buoys and cranes	Do.
Galley and galley inclosure, including nonconducting lining to bulkhead	Do.
Main deck plating	Do.
Electric-light plant, molding, wiring, etc	Do.
Painting	Do.
All portable furniture	Do.
Officers' quarters and fittings	Do.
Plans	Nine-tenths completed.
Vessel docked and bottom painted.	
Undocked.	

The *Amphitrite* was reported ready to go into commission April 16, 1895, and complete in all matters pertaining to the Bureau of Construction and Repair, the equipage having been put on board.

The *Amphitrite* went into commission April 23, 1895, and sailed from this yard May 9, 1895, when the draft of water was 13 feet 9½ inches forward and 14 feet 5½ inches aft.

Weights.

Department.	On board July 1, 1894.	Placed on board during year.	On board May 9, 1895.
	Pounds.	*Pounds.*	*Pounds.*
Construction and Repair	1,171,441	78,219	1,249,660
Steam Engineering	74,095	23,538	97,633
Ordnance	1,486,689	386,239	1,872,928
Equipment	38,529	15,227	53,756
Total	2,770,754	503,223	3,273,977

U. S. S. RALEIGH.

Items completed before July 1, 1895.—Keel, stem, sternpost, rudder, stem frame, transverse frames, flat keelson, longitudinals, outside plating, inner bottom plating and manholes, all deck and skid beams, center line bulkheads and passage, all deck stringers and deck plating, protective deck, all transverse bulkheads, coal bunker and fore and aft bulkheads, all stanchions, 6-inch gun support and stairway to berth deck, sponsons for 3-pounders forward, 5-inch sponsons, sponsons for 1-pounders aft, engine, boiler and shaft bearers, shaft tubes and struts, water-tight doors, plank sheers, hammock berthing and fore and aft bridges, freeing ports, portable and fixed coaling chutes, port shutters, torpedo tubes (such work on that comes under Construction and Repair), hatch coamings and skylights, canopies, gratings and hatch covers, bridge, pilot house, cofferdams packed with cellulose, coaling trunks, ammunition lifts, magazines, shell rooms and ammunition rooms, air ports, ash chutes, coal scuttles, mast partners and steps, windlass and capstan, manger, bow stoppers, hawse pipes, all bitts and warping pipes, wire nippers, ringbolts in deck, eyebolts in beams, paymaster's office, armory prison, master-at-arms's locker, signal locker, mess benches and tables for crew, dispensary, pantries, refrigerating room, oil tanks, mess lockers and jack rods for bags, hammock hooks, watch bell, galley house and all fittings, conning tower, shield and tube, anchor davits, billboards, hose reels, water-closets, lavatories, firemen's wash room, engineers' workshop, ceiling in hold and storerooms, wardroom, junior officers' quarters, voice tubes, trimming tanks, drainage and pumping, chain lockers, wood floors in coal bunkers, water alarms in Construction and Repair, electric light installation in Construction and Repair, sounding tubes, water courses, sail room, lumber irons, scuppers, bilge keels, ventilation of quarters, iron ladders, electric call bells in Construction and Repair, steering arrangement, guard rails and stanchions, awning stanchions, hatch cranes, side ladders and sea steps, hatch ladders, boat davits and cradles, shot racks, attachments for rigging, chocks for fair leaders, pin rails, label plates, jacob's ladders, running lights, life-buoy guards, swinging booms, ensign staff, draft figures, cementing, heeling ship, evaporator room, all spare blocks, cooperage, portable furniture in place, all boats, painting, graining, and polishing of woodwork, final drainage plans, after 5-inch sponsons, new ventilation of dynamo room, miscellaneous equipage and supplies, stowage of chutes and chests, etc., miscellaneous small jobs to prepare ship for going into commission.

In a letter dated August 5, 1894, No. 190-94, the naval constructor of this yard reported the *Raleigh* complete, fitted out, and ready for sea, as far as the work is this Department was concerned.

The *Raleigh* left this yard September 8, 1894, at 1 p. m. All stores, ammunition, water, and coal on board, and boilers at steaming level. Fully equipped, except torpedoes.

Draft of water.

	Feet.	Inches.
Forward	18	9
Aft	20	0
Mean	19	4½

Drag, 1 foot 3 inches; displacement, 2,485 tons.

The *Raleigh* returned to the yard a second time on October 23, 1894, to have the ventilation of her fire room improved, and left January 21, 1895.

Weights.

Department.	On board July 1, 1894.	Placed on board during year.	On board January 21, 1895.
	Pounds.	*Pounds.*	*Pounds.*
ı and Repair	3,634,698	32,499	3,667,197
ıeering	1,752,121	13,089	1,765,210
	283,340	15,148	298,488
	163,341	3,528	166,869
	5,833,500	64,264	5,897,764

ıael.	Date of survey.	Date of approval of survey.	Date when work was ordered.	Date when work was begun.	Date of completion of work.	Progress in tenths and estimated date of completion.
			Aug. 8-20, 1894.	Aug. —, 1894	Sept. —, 1894	
			May 11-14-22, 1895.	May —, 1895	June 1, 1895	
			Dec. 8-12-13, 1894.	Dec. —, 1894	Dec. 22, 1894	
			Dec. 22, 1894	Dec. —, 1894	Jan. 5, 1895	
			Sept. 10, 1894	Oct. —, 1894	Oct. —, 1894	
ies			Miscellaneous repairs during fiscal year.			
ıh			Aug. 9, 1894	Sept. 20, 1894	Oct. 30, 1894	
	Dec. 19, 1894	Jan. 3, 1895	Dec. —, 1894	Dec. —, 1894	Mar. 2, 1895	
	June 11, 1895	June 21, 1895	Jan. 5-19, 1895	Jan. —, 1895	Feb. 2, 1895	Six-tenths; August, 1895.
			June 21, 1895	Not yet commenced.		
			Sept. 28-29, 1894; Dec. 8, 1894.	Oct. —, 1894; Nov. —, 1894; Dec. —, 1894.	March, 1895	
			Aug. 9, 1894	Sept. —, 1894	Nov. 7, 1894	
ı			do	Aug. 30, 1894	Sept. —, 1894	
ıe			do	Sept. —, 1894	Oct. 30, 1894	
			Mar. 6, 1895	Mar. —, 1895		Begun Oct. 31, 1895.
			Dec. 5, 1894	Dec. —, 1894	Dec. 22, 1894	
			May 10, 1895	May, —1895	June 8, 1895	
			Sept. 10, 1894	Sept. —, 1894	Nov. 12, 1894	
	June 20 to July 10, 1894.	July 21, 1894	July 21, 1894; Jan. 18, 1895; Mar. 6, 1895	July 22, 1894; Jan. —, 1895; Mar. —, 1895	Mar. 16, 1895	
			Sept. 8-13, 1894; Oct. 4-14, 1894.	Sept. 15, 1894 Oct. —, 1894	Dec. 22, 1894	
			Nov. 20, 1894	Nov. 26, 1894	Work finished in Annapolis.	
			Sept. 10, 1894	Sept. 20, 1894	Nov. 12, 1894	
			Aug. 7, 1894	Aug. —, 1894	Aug. 30, 1894	
	Jan. 17, 1895	Jan. 19, 1895	Jan. 19-22, 1895; Jan. 29, 1895; Feb. 2, 1895	Jan. —, 1895 Feb. —, 1895	Feb. —, 1895	

ɣ respectfully,

FRANCIS T. BOWLES,
Naval Constructor, U. S. N.

ıMANDANT, NAVY-YARD, NORFOLK, VA.

NAVY-YARD, MARE ISLAND, CAL., *July 2, 1895.*

In compliance with the letter of the Bureau of Construction and Repair, 5, dated June 7, 1895, I have the honor to submit the following:

ɪption of work done on the U. S. S. *Monadnock* and tug No. 4, from July 1, ıne 30, 1895, inclusive.

lar statement, giving information as to repair work done at this yard from 94, to June 30, 1895, inclusive.

negatives and two prints of three views of the *Monadnock, Hartford,* and are forwarded herewith.

U. S. S. MONADNOCK.

mpleted on or before June 30, 1894.—All old work interfering with altera- ent and all unnecessary openings resulting therefrom closed. Main-deck ɪerth-deck plating and planking; fore and aft bulkheads; water-tight ɔhain lockers; stanchions; superstructure framing; deck beams, plating,

ers, tie-plates, and deck planking; half beams and ledges; skid beams; pass-
uttles; plank sheer; wood backing; 4-inch gun mounts; military mast; mast-
galley inclosure; mess tables and benches; hatch coamings; armored smoke
nd armored gratings; coal scuttles; metal gratings for deck lights and coaling
es; water tanks; mooring bitts; towing bitts; warping chocks; iron rungs an
rs where required; hammock hooks; steam capstan, windlass and winch; wind
od; forced draft in fire room; water-tight compartments tested.

Work done during year.	Condition June 30, 18[illegible].
ng tubes	Completed.
g tower	Do.
pports	Do.
and flying bridge	Do.
mess chests	Do.
rts	Do.
pipes and billboards	Do.
narks	Do.
ting manger and galley	Do.
mor	Do.
te armor	Do.
light platform	Do.
gs for hammock berthing	Do.
cutter	Do.
g and life-line stanchions	Do.
	Do.
rail stanchions	Do.
age	Do.
ouse	Do.
erse bulkheads	Do.
n bulkheads for pipe leads	Do.
ng drawings	Do.
tight doors	Nine-tenths completed.
ock berthing structure	Eight-tenths completed.
eck plank	Completed.
work in storerooms	Eight-tenths completed.
work in shell rooms	Four-tenths completed.
work in magazines	Do.
oom, joiner work	Eight-tenths completed.
joiner work	Nine-tenths completed.
officers' quarters, joiner work	Do.
nt officer's quarters, joiner work	Two-tenths completed.
ster's office, joiner work	Three-tenths completed.
ive officer's office, joiner work	Do.
tor's office, joiner work	Do.
y	Five-tenths completed.
lockers	Nine-tenths completed.
ers and ordnance workshop	Five-tenths completed.
s	Nine-tenths completed.
closets	Seven-tenths completed.
oms	Four-tenths completed.
officers' lavatory	Five-tenths completed.
ry for crew	Eight-tenths completed.
gs and hatch covers	Seven-tenths completed.
abel plates	Eight-tenths completed.
ghts	Completed.
oy stands	Nine-tenths completed.
stoppers	Six-tenths completed.
s and companionways	Nine-tenths completed.
ts in beams, ringbolts in deck	Six-tenths completed.
utes	Eight-tenths completed.
ks	Two-tenths completed.
es	Nine-tenths completed.
ng booms	Do.
and ensign staff	Do.
	Do.
	Do.
vits, derricks, etc	Seven-tenths completed.
tion to coal bunkers	Completed.
davit	Seven-tenths completed.
n's wash room	Six-tenths completed.
coamings and skylights	Nine-tenths completed.
g machinery	Do.
ng tubes	Seven-tenths completed.
call bells (C. and R. work)	Do.
aphs	Nine-tenths completed.
ge and pumping arrangements	Do.
tion	Do.
ir supply pipes to bunkers	Four-tenths completed.
and fire-alarm system	Nine-tenths completed.
le furniture	Seven-tenths completed.
g decks	Do.
ing double bottom	Five-tenths completed.
g	Two-tenths completed.
d drawings	
as docked and painted.	

There is 88 per cent of the work of this Department finished, based upon the final completion of the vessel. The estimated date of completion is December 1, 1895.

The delay in the delivery of the armor for this vessel has lengthened the time necessary for completion very considerably. The last closing plate of the side armor was received on May 24, 1894, and the last of the turret armor was only received on May 16, 1895.

Weights.

Departments.	Weight placed on board during year.	
	Tons.	Pounds.
Construction	248	1,256
Engineering	54	1,364
Equipment	20	1,136
Total weight for year	323	1,516
Weight previously reported	1,548	1,453
Total weight added since completion of vessel was undertaken	1,872	729

Draft of water July 1, 1895.

	Feet.	Inches.
Forward	10	6
Aft	12	10

TUG No. 4.

Keel laid Monday, April 29, 1895.

Work done.	Condition June 30, 1895.
Laying down	Completed.
Keel, stem, and stern frame	Do.
Rudder	Six-tenths completed.
Steering quadrant	Completed.
Skin plating	Four-tenths completed.
Frames and intermediate frames set and erected	Completed.
Transverse bulkheads	Nine-tenths completed.
Coal-bunker bulkheads	Three-tenths completed.
Main-deck beams and plating	Six-tenths completed.
Berth-deck beams and plating	Do.
Engine seating and boiler bearers	Do.
Water-tight doors	Three-tenths completed.
Water-tight scuttles	Four-tenths completed.
Fore and main masts and gaffs	Five-tenths completed.
Steam winch	Two-tenths completed.
Drain-pipe connections	Six-tenths completed.
Wash plates	Four-tenths completed.

There is 30 per cent of the work of this Department completed, based upon the final completion of the vessel and outfit ready for sea. The vessel will be ready for launching early in September, and unless unforeseen delays occur will be ready for sea by November 30, 1895.

Very respectfully,

WM. J. BAXTER,
Naval Constructor, U. S. N.

The COMMANDANT, NAVY-YARD, MARE ISLAND, CAL.

Statement of vessels on which repair work was done at navy-yard, Mare Island, Cal., during the year ended June 30, 1895.

Name of vessel.	Date of survey.	Date of approval of survey.	Date when work was ordered.	Date when work was begun.	Date when work was completed.	Estimated date of completion.	Progress in tenths.
	1893.	1893.	1893.	1894.		1897.	
U. S. S. Hartford	Aug. 11	Sept. 15	Sept. 15	Dec. 17	.....	Jan. 30 1895.	
U. S. S. Boston	Aug. 20 1894.	Dec. 2 1894.	Dec. 2 1894.	June 14	..... 1894.	Sept. 30	
U. S. S. Thetis	May 26	June 6	June 1	June 4	Sept. 15	.....	.....
U. S. S. Marion	June 23	July 25	June 23	June 25	Oct. 24	.....	.....
U. S. S. Bennington	Sept. 7	Sept. 20	Sept. 8	Sept. 8	Dec. 22	.....	.....
U. S. S. Philadelphia	Sept. 11	Sept. 21	Aug. 23	Aug. 30	Dec. 15	.....	.....
U. S. S. Yorktown	Sept. 29	Oct. 12	Sept. 28	Sept. 29	Nov. 8	.....	.....
U. S. S. Alert	Oct. 17	Nov. 3	Oct. 18	Oct. 26	Dec. 22	.....	.....
U. S. S. Adams	Oct. 30	Nov. 15	Oct. 30	Nov. 6	.....	Nov. 15	1
U. S. S. Mohican	Oct. 31	Nov. 13	Nov. 2	Nov. 6	Dec. 27	.....	.....
U. S. S. Thetis	1895. May 28	1895. June 4	1895. July 1	.....	.....	Aug. 15	.....
U. S. F. C. S. Albatross	1894. Nov. 14	1894. Dec. 5	1894. Dec. 5	1895. Jan. 1	1895. April 6	.....	.....

OFFICE OF SUPERINTENDING CONSTRUCTOR,
BATH IRON WORKS,
Bath, Me., July 6, 1895.

SIR: In compliance with the Bureau's letter No. 7402–95, dated June 7, 1895, relative to photographic views and special report of work done from July 1, 1894, to June 30, 1895, on vessel building under my supervision, I respectfully submit the following report of work done on the *Katahdin* at these works:

Work done during year.	Condition June 30, 1895.
Skid beams	Completed.
Deck stanchions	Do.
Hatch coamings and canopy frames	Do.
Coal bunkers and other fore and aft bulkheads	Do.
Boat cradles and rests	Do.
Coal bunker alarms	Do.
Galley inclosure	Do.
Oil tanks and fittings	Nearly completed.
Testing water-tight compartments	Completed.
Armor: 6-inch side, 2-inch, 5½-inch, and 6-inch deck	Do.
Conning tower and fittings	Nearly completed.
Smokestack (armored)	Completed.
Awnings above skid beams	Partly completed.
Curtains (fore and aft)	Do.
Painting ship throughout	Do.
Ventilators (armored)	Completed.
Boat davits	Do.
Boats	Do.
Hatch cranes	Do.
Awning and life-line stanchions	Do.
Lumber irons	Nothing done.
Eyebolts in beams	Completed.
Ringbolts	Do.
Grab rods	Do
Hammock hooks	Do.
Clamps and handles for doors	Nearly completed.
Socket and levers	Do.
Iron rounds or ladders	Completed.
Life buoys and fittings	Do.
Ship's bell and fittings	Do.
Steering gear	Do.
Light-box stanchions	Do.
Warping or towing bitts	Do.
Warping chocks	Do.
Coaling scuttles	Do.
Sea steps	Do.
Hawse pipes	Do.
Joiner work	Nearly completed.
Carpenter work	Do.

Work done during year.	Condition June 30, 1895.
booms	Completed.
d ensign staffs	Do.
g flats	Do.
(iron and wood)	Do.
s work	Do.
ght doors	Do.
lves and pipes	Do.
ters and bag racks	Do.
its	Do.
light boxes and fittings	Do.
tes	Not completed.
communications	Nearly completed.
pdless	Completed.
on	Nearly completed.
supply and exhaust to coal bunkers	Completed.
and pumping arrangements	Do.
arms	Do.
water bottom	Do.
	Nearly completed.
lighting	Do.
e	Do.
	Not purchased.
e	Partly completed.
	Completed.
lea and benches	Do.
set (extra)	Do.

y-five per cent of the hull and fittings completed.
contractors estimate that the *Katahdin* will be ready for official trial about 1, 1895, and final delivery to the Government in two weeks after the comple- the trial.

'ery respectfully,

JOHN B. HOOVER, U. S. N.,
Superintending Constructor.

CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
WM. CRAMP & SONS' SHIP AND ENGINE BUILDING WORKS,
Philadelphia, July 1, 1895.

(1) In compliance with the instructions contained in the Bureau's letter No. of the 7th ultimo, I have the honor to submit herewith a special report ing the work done on each vessel under my superintendence from July 1, 1894, 30, 1895, inclusive, as follows:

U. S. S. MINNEAPOLIS.

vessel left Cramp's shipyard for the Government trial on July 10, 1894, the king place on July 14.
uly 1, 1894, it was estimated that 93 per cent of the hull work under the con- based on the vessel fitted out ready for sea, was completed.
vessel was delivered to the commandant of the navy-yard, League Island, Pa., ember 8, 1894, went into commission December 13, 1894, and was finally d June 19, 1895.
work done upon the vessel from July 1, 1894, to completion was as follows:
water-tight doors were all overhauled and fittings completed.
ngs to 4-inch gun sponson shutters completed. Floor to conning tower and e gratings fitted.
unition hoists were completed; passing scuttles advanced from nine-tenths pletion; torpedo manipulating rooms, that had only the castings for torpedo n place, were completed.
cofferdams were packed with cellulose; sheet anchor stowed; one steam winch d; boats stowed; cradles made and fitted; awning stanchions made and fit- tch canopies, which were just begun, were completed, hatch coamings, sky- and inclosures advanced from eight-tenths to completion; armor gratings and gs to hatchways from five-tenths to completion; ladders to hatchways fit- le ladders, except starboard after one, fitted; rail to search light platform fit- d portable coaling chutes made and fitted.

Secondary valves of drainage system were completed, and ventilation advanced from nine-tenths to completion.

Fittings were put in the machinist's quarters, and refrigerating rooms, chart house, lavatories and water-closets, and following items completed or fitted on the ship: Fittings to hammock berthing, coaling scuttles, air ports, for chains, rigging, etc., and stern gallery, completed; and all swinging tables and benches, reels, hatch cranes, lockers and chests, hammock hooks, eyebolts, shot and rifle racks, lumber irons, pin rails, chocks for fair leaders, brass rubbing plates, brass label plates, Jacob's ladders, watch bell, etc., received and fitted.

Joiner work completed in magazines and shell rooms, hold storerooms, ordnance workshop, engineer's storerooms, engineer's workshop, engineer's log room, executive officer's, navigator's, and paymaster's offices, pantries, armory, dispensary, general and other storerooms, and in fixed ammunition rooms.

All floors and deck coating laid, portable furniture placed on ship, miscellaneous outfit and cooperage made and placed on ship.

Electric-light plant, voice pipes, telegraphs, etc., advanced from nine-tenths to completion.

All cement work, paint work, cleaning, polishing, varnishing, gilding, and all work necessary to put ship in condition for commissioning, was done.

U. S. S. INDIANA.

This vessel was launched February 28, 1893, and is now being completed. A preliminary contractors' trial was held from March 6 to March 9, 1894. On July 1, 1894, it was estimated that 87 per cent of the hull work under the contract, based on the vessel fitted cut ready for sea, was completed; the present estimated percentage being 97 per cent.

I estimate that the vessel will be ready for the contractors' trial in November of this year, and for final delivery about one month later.

The work done upon this vessel during the past year has been as follows:

Water-tight bulkhead on No. 14, between berth and main decks, has been erected.

Water-tight doors have been overhauled.

The side armor has all been received and fitted, except securing a few bolts, which have not yet been received.

The casemate armor at ends, above belt, has been advanced from five-tenths to completion.

The 13-inch turrets have been put in place, turret-turning gear installed, and hydraulic machinery and pipes fitted as far as possible until the gun mounts are installed.

The turret armor for forward turret is now ready to be hoisted into place. The gun mounts for the forward turret have been received, and the installation of them is begun.

All the 8-inch turrets have been put in place, turning gear installed, and armor secured as far as possible until the gun mounts are in place.

The armor protection for the 6-inch and 6-pounder guns has advanced from eight-tenths to completion.

The conning tower has been received and fitted, and the military mast and tops hoisted into place and secured. The topmast is nearly ready to be hoisted into place. The bridge-deck planking has been laid. The chart house has been built and nearly all fittings completed.

The 6-inch guns in casemates have been installed.

The torpedo manipulating rooms have been advanced nearly to completion. All the tubes are fitted, port opening gear installed, brackets for torpedoes put up, and the other fittings are under way.

The boats have been received and placed on board, and boat chocks are being fitted. The boat crane has been advanced from nine-tenths to completion.

Nine cofferdams have been packed with cellulose, and the others are being packed.

The galleys have been placed on board and fittings are nearly completed; awning and rail stanchions made and fitted on chart house and bridge; hatch canopies, hatch covers, and gratings, side ladders, sentry's walk, 6-pounder gun platforms, head ornament, and label plates for ventilation system, made and fitted.

The fittings have been commenced on hammock berthing, and life buoys are fitted, and the hammock hooks are being fitted.

The bulkheads in officers' quarters have been changed to corrugated iron, and the alterations are completed.

The butterfly valves, and some pipes connected with the ventilation system, and also some pipes connected with the drainage system, have been fitted.

The flash plates for 13-inch guns are being fitted, and are nearly completed.

The joiner work has been commenced and completed in the following: Magazines, shell rooms, fixed ammunition rooms, executive officer's and navigator's offices, ward-

room and junior officers' pantries; advanced to completion in the general and other storerooms, lavatories and water-closets, paymaster's office, and dispensary; and work commenced in the sail and awning room, ordnance storeroom, engineer's workshop, electrical storeroom, and captain's office.

Of the above, the 6-pounder ammunition rooms and the 6-inch magazines are being altered to suit a change in size of 6-pounder boxes.

The work on the sick bay and new dispensary has been commenced, the deck coating is being laid, and alterations in the fresh-water system have been begun.

The stands for the 6-pounder guns in the hammock berthing have been fitted, and work is begun on the search-light and control-stand platforms.

The fresh-water tanks have been tested for water-tightness and passed, electric plant and means of interior communication advanced from six-tenths to nine-tenths, and painting has been done as far as necessary for the preservation of the ship.

U. S. S. MASSACHUSETTS.

This ship was launched June 10, 1893, and is now being completed. On July 1, 1894, it was estimated that 84 per cent of the work on the vessel under the contract was completed, the present percentage being 92 per cent.

I estimate that the vessel will be ready for the contractor's trial and for final delivery to the Government within four months from the delivery of the last armor plate.

The progress upon this vessel during the past year has been as follows:

The bulkhead at No. 14, between berth and main decks, has been erected.

The deck planking has been advanced from five-tenths to nine-tenths.

Nine side-armor plates have been received, and the work of fitting them is begun.

The casemate armor above belt has been advanced from five-tenths to completion.

The 13-inch turrets have been advanced from four-tenths to completion in the shop and one is fitted on the vessel. The turret-turning machinery has been installed, and the hydraulic machinery and pipes fitted as far as possible until the gun mounts are in place.

The 8-inch barbette armor has been fitted on the ship, the turrets hoisted into place, the turning gear installed, and armor placed on one turret.

The shutters for the 6-inch and 6-pounder gun sponsons have been nearly completed.

The conning tower and shield have been received and fitted, the military mast and tops hoisted into place and secured.

The softening of the harveyized surface of the 13-inch and 8-inch barbette armor to enable holes to be drilled in the same has been nearly completed.

The torpedo fittings to hull have been nearly completed and the fittings in the torpedo-manipulating rooms advanced to six-tenths.

The cofferdams have been tested, boat cranes installed, the alteration on bulkheads in officers' quarters to corrugated iron five-tenths completed, hatch coamings, skylights, and inclosures advanced from eight-tenths to completion, gratings and hatch covers advanced nearly to completion, refrigerating and ice-machine rooms fitted, coaling scuttles and chutes completed, covers to fresh-water tanks completed and tanks tested, firemen's wash room advanced from six-tenths to completion except floors, officers' and crew's lavatories and water-closets fitted, galley beds commenced, canopies to hatches advanced to five-tenths complete, label plates for ventilation system fitted, life-buoy fittings begun, sea steps completed, side ladders made and fitted, and the rail and awning stanchions made in shop and heels for same fitted on ship.

Butterfly valves and some pipes belonging to ventilation system and the pumps and some pipes belonging to drainage system have been fitted.

All but three of the boats are completed, but none have been placed on board.

The electric-lighting plant and means of interior communication have been advanced from five-tenths to seven-tenths.

The work of fitting the flash plates for 13-inch guns has begun, and the painting has been done as far as necessary for preservation.

Work on sick bay and new dispensary has been begun.

Joiner work has been begun and completed in the following: Magazines, shell rooms, and fixed-ammunition rooms, all the after storerooms above protective deck, engineer's log room, the engineer's storeroom, paymaster's office and dispensary, and begun in the sail and awning room, engineer's workshop, ordnance stores, and electrical stores.

Of the above, the 6-inch magazines and 6-pounder fixed ammunition rooms are being altered to suit a change in the size of 6-pounder ammunition boxes.

The stands for the 6-pounder guns in the hammock berthing have been fitted, and work on the control stands and search-light platforms is begun.

U. S. S. BROOKLYN.

On July 1, 1893, the lines of this vessel were faired on the mold-loft floor, and the first keel plate was laid August 2, 1893. On July 1, 1894, the estimated percentage of the work done upon the vessel under the contract, based on the vessel fitted out ready for sea, was 20 per cent. The present estimated percentage is 54.

I estimate that the vessel will be launched in September, and will be ready for final delivery about one year later.

The progress upon the vessel during the past year has been as follows:

The remaining keel plates at the end have been completed, the upper part of stem received and fitted, the stern post received and fitted, the longitudinals advanced from nine-tenths to completion, the transverse framing advanced from about five tenths to completion, the outside plating completed to gun deck except in wake of shaft tubes, the deck plating on the platforms and protective decks advanced from five-tenths to completion, and on the berth, gun, and main decks is nearly completed. The deck beams are completed except in wake of 8-inch turrets.

The longitudinal bulkheads below the protective deck have been advanced from three-tenths nearly to completion, and above the protective deck to six-tenths completed; the transverse bulkheads below the protective deck from five-tenths to eight-tenths, and above the protective deck to six-tenths completed.

The hatches and hatch coamings have been advanced to about seven-tenths completed.

All the gun sponsons have been placed on the ship, and the work of securing them is about seven-tenths completed.

Several water-tight doors have been fitted, the work on the main and auxiliary drain pipes is nearly completed, the engine bearers and pump foundations are completed, and the bed plates for the engines are being fitted, the boiler saddles are nearly completed, the cofferdam bulkheads are about six-tenths completed, and the work is well under way on hammock-berthing, gutters in decks, coaling chutes, and air ports.

The side armor is now being fitted, several plates being in place, but none secured.

The glacis plates have been fitted on the sides of the engine-room hatch, the bilge keels completed, the splinter bulkheads fitted, the shaft tubes and portions of the struts put in place and the former ready for testing, foundations for windlass bed nearly completed, and the work on deck planking begun.

The condensers, pumps, and other auxiliary machinery are being placed in the engine and boiler rooms.

All painting has been done where practicable and so far as necessary for the preservation of the vessel.

U. S. S. IOWA.

The first keel plate of this vessel was laid August 5, 1893. On July 1, 1894, 19 per cent of the work on the vessel under the contract, based on the vessel fitted out ready for sea, was completed, the present percentage being 40 per cent.

I estimate that the vessel will be ready for final delivery to the Government in about two years,

The progress during the past year has been as follows:

The forward plates of the flat and vertical keels have been completed, the stem erected and completed except riveting, the stern post and stern frame completed except riveting, the rudder received, the transverse framing advanced from eight-tenths nearly to completion, the outside plating advanced by about one-tenth, the beams on the platform and berth decks advanced from seven-tenths nearly to completion, and all other deck beams erected except in wake of 12-inch and 8-inch barbettes.

The deck plating has been advanced on the platform deck from six-tenths to completion, on the berth deck from two-tenths to eight-tenths and on the protective, main, and upper decks to nine-tenths, eight-tenths, and eight-tenths, respectively.

The longitudinal bulkheads below the protective deck have been advanced from four-tenths nearly to completion, and those above the protective deck to five-tenths completed; the tranverse bulkheads below the protective deck from one-tenth to eight-tenths, and on those above protective deck the work is begun.

The framing behind the side armor has been advanced from nine-tenths to completion, and on the diagonal armor is nearly completed.

The work of fitting the side-armor backing is just begun, and on the diagonal armor all the backing has been fitted, but is not yet secured.

The diagonal armor for one end of the vessel has been received.

The boiler saddles have been advanced from one-tenth to five-tenths, pump and condenser foundations put in, the docking keel advanced from four-tenths to completion; openings for hatches, water-tight doors, and coaling scuttles cut, and the work of fitting them begun.

The cofferdams forward have been nearly completed.

The pumps have been fitted in the engine and boiler rooms, and painting has been done wherever practicable.

(2) Photographic views of each vessel, taken in accordance with the Bureau's directions, will be forwarded as soon as received.

Very respectfully,

J. H. LINNARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR FOR U. S. NAVY,
COLUMBIAN IRON WORKS AND DRY DOCK COMPANY,
Baltimore, Md., July 13, 1895.

SIR: (1) In reply to the Bureau's letter No. 7402-95, of the 7th ultimo, relative to a special report on the condition of work on June 30, 1895, on each vessel building at these works, I have to report that no work has been commenced on nor any material received for these boats. The lines have been faired and a few plans approved.

(2) No estimate for the percentage completion can be given in the present early stage of the work.

(3) I estimate the time for the contractor's trial to be in August, 1896, the boats to be delivered to the Government the same month.

Very respectfully,

GEO. H. ROCK,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 9, 1895.

SIR: (1) In obedience to the instructions contained in the Bureau's letter No. 7402-95, of the 7th ultimo, I have the honor to submit the following special report of the work executed in connection with the construction of light-draft protected gunboat No. 7, from July 1, 1894, to June 30, 1895, inclusive:

At the beginning of the above period, although a large amount of material had been received at these works for the construction of this vessel, only a few frames had been bent and partially fitted. The first keel plate was laid on the blocks of the building slip on August 9, 1894, and on the 30th ultimo the percentage of work completed, based on the vessel fitted out ready for sea, was estimated to be 47 per cent.

A detailed statement of the work done on the vessel up to the 1st of this month is given below, but it may be stated generally that the greater part of the structural steel hull is completed, that the water-tight compartments are being tested preparatory to launching, the armor plates of gun sponsons are being fitted on the vessel, and that the general condition of the hull is such that it should be possible to launch this vessel sometime in the month of August.

Only a moderate amount of work, however, has been done on hull fittings, and in view of this fact I am of the opinion that it will not be possible to complete this vessel on the date called for by the contract, namely, January 22, 1896, but I estimate that it is possible to have the contractors' trial in May, 1896, and final delivery to the Government by July 1, 1896.

Photographs showing the condition of the vessel have been taken, and will be forwarded as soon as received from the photographer.

The following is a detailed statement of the work done upon this vessel during the period reported upon:

Inner and outer flat keel plates: 100 per cent completed and riveted.
Vertical keel and angles: 100 per cent completed and riveted.
Stem: 100 per cent completed.
Upper and lower stern posts: 100 per cent completed.
Steel casting of rudder frame has been received and machined.
Rudder stock has been forged and 50 per cent machined.
Steel castings for the upper strut arms: 100 per cent completed and riveted.
Flat keelson plates: 100 per cent completed and riveted.
Outside plating: 95 per cent in place and 75 per cent riveted.
Doubling plates: 100 per cent completed and riveted.

Transverse framing in general: 90 per cent completed and 100 per cent riveted.
All longitudinals in general: 100 per cent completed and riveted.
Upper-deck beams and carlings: 100 per cent completed and riveted.
Main-deck beams and carlings: 100 per cent completed and riveted.
Water-tight deck beams: 100 per cent completed and riveted.
Berth-deck and platform-deck beams: 100 per cent completed and riveted.
Upper-deck stringer, deck and tie plates: 100 per cent completed and riveted.
Main-deck stringer, deck and tie plates: 100 per cent completed and riveted.
Main-deck waterway stapels: 90 per cent completed.
Berth deck stringer and deck plates, forward: 100 per cent completed and 95 per cent riveted.
Berth-deck stringer bars and staples: 100 per cent completed and riveted.
Berth-deck plating, aft: 100 per cent completed, but not riveted.
Berth-deck stringer bars and staples, aft: 75 per cent completed, but not riveted.
Water tight deck stringer bars: 100 per cent completed and riveted.
Tiller flat: 100 per cent completed, but not riveted.
Plating under after magazines: 100 per cent completed and riveted.
Upper deck hatch and skylight coamings: 90 per cent completed and riveted.
Main deck hatch and skylight coamings: 90 per cent completed and riveted.
Berth and water tight deck hatch frames and coamings: 5 per cent completed.
Engine hatch casing: 100 per cent completed and 50 per cent riveted.
Forward boiler hatch casings and hatch trunks: 75 per cent completed and 20 per cent riveted.
After boiler room hatch casing and hatch trunk: 100 per cent completed and 50 per cent riveted.
Inner bottom plating: 100 per cent completed and riveted.
Engine crank pit pockets: 100 per cent completed and riveted.
Drain pockets on inner bottom: 100 per cent completed and riveted.
All coal-bunker bulkheads below water-tight deck: 100 per cent completed and riveted.
All coal-bunker bulkheads above water-tight deck: 100 per cent completed and riveted.
All longitudinal bulkheads in forehold and abaft engine space: 100 per cent completed and riveted.
Longitudinal bulkheads of passage between boilers: 100 per cent completed and riveted.
All transverse bulkheads below water-tight deck: 100 per cent completed and 90 per cent riveted.
All transverse bulkheads above water-tight deck: 100 per cent completed and 85 per cent riveted.
Coal girders on water-tight deck: 100 per cent completed and riveted.
Gutters on upper deck: 100 per cent completed and riveted.
Dynamo-room bulkheads: 100 per cent completed and 75 per cent riveted.
Seatings for water tanks: 100 per cent completed and riveted.
Shaft tubes and castings at ends of tubes: 75 per cent completed.
Boiler bearers: 100 per cent completed, but not riveted.
Bilge keels: 95 per cent completed.
Mast partners: 30 per cent completed.
Mast plates and stiffeners: 100 per cent completed, and masts are being assembled.
Fresh-water tanks: 100 per cent completed and in ship, but no piping belonging to same has been fitted.
The armor for the four 4-inch armored sponsons has been received and lined up on ship, and the sponsons are 25 per cent completed.
One armor plate for the four 6-pounder sponsons have been received, lined up, and the sponson is 60 per cent completed.
Sponsons for the 4-inch guns on upper deck: 80 per cent completed, but not riveted.
Flooding arrangement of trimming tanks: 50 per cent completed.
Flooding arrangement of magazines: 50 per cent completed.
The tiller, compound tiller, spare tiller, and other heavy forgings in connection with the steering gear: 100 per cent completed and being machined.
Deck stanchions: 25 per cent in ship.
Air-port castings have been received and are being machined.
The reenforcing plates at the air ports: 100 per cent completed.
Seventy-five per cent of the air ports have been cut.
Scuppers are 90 per cent completed.
Water-tight hinged doors are 10 per cent completed.
The steam anchor windlass and the steam capstan in connection with the windlass have been received; also chain stoppers.
Water tight man hole covers of the inner bottom compartments, trimming tanks and fresh-water tanks: 100 per cent completed and in place.

oaling trunks: 10 per cent completed.
sh chutes are 10 per cent completed.
[asts steps: 100 per cent completed, but not riveted.
teel wire cable nippers have been received.

Very respectfully, J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

he CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 9, 1895.

R: (1) In obedience to the instructions contained in the Bureau's letter No.)-95, of the 7th ultimo, I have the honor to submit the following special report he work executed in connection with the construction of light draft protected boat No. 8, from July 1, 1894, to June 30, 1895, inclusive:

t the beginning of the above period, some material had been received at these ks for the construction of this vessel, and the keel blocks and building slip pre- ed for beginning work. The actual work of construction, however, had not been un. The first keel plate was laid on the blocks of the building slip on October 16, , and on the 30th ultimo the percentage of work completed, based on the vessel d out ready for sea, was estimated to be 47 per cent.

detailed statement of the work done on the vessel up to the 1st of this month iven below, but it may be stated generally that the greater part of structural l hull is completed, that the water-tight compartments are being tested prepara- r to launching, the armor plates of gun sponsons are being fitted on the vessel, that the general condition of the hull is such that it should be possible to launch vessel some time in the month of August.

nly a moderate amount of work, however, has been done on hull fittings, and in w of this fact I am of the opinion that it will not be possible to complete this sel on the date called for by the contract, namely, January 29, 1896, but I esti- e that it is possible to have the contractors' trial in May, 1896, and final delivery he Government by July 1, 1896.

hotographs showing the condition of the vessel have been taken, and will be for- ded as soon as received from the photographer.

he following is a detailed statement of the work done upon this vessel during the iod reported upon:

nner and outer flat keel plates: 100 per cent completed and riveted.
ertical keel and angles: 100 per cent completed and riveted.
tem: 100 per cent completed.
orward, intermediate, and after stern posts: 100 per cent completed and 50 per cent sted.
haft tubes and castings at ends of tubes: 50 per cent completed.
teel castings of the upper strut arms: 100 per cent completed and riveted.
oth rudder-frame castings have been received.
oth rudder stocks forged and 50 per cent machined.
he carrier girders of rudders: 50 per cent completed.
he cast-steel rudder-stock stuffing boxes in place and riveted.
he transverse framing in general: 100 per cent completed and riveted.
ll longitudinals in general: 100 per cent completed and riveted.
utside plating: 90 per cent completed, and of this 80 per cent is riveted.
ll doubling plates in place and 90 per cent riveted.
ide armor: 50 per cent in place and drilled, but not riveted.
nner bottom: 100 per cent completed and riveted.
ngine crank-pit pockets: 100 per cent completed and riveted.
rain pockets on inner bottom: 100 per cent completed and riveted
pper-deck beams: 100 per cent completed.
[ain-deck beams and carlings: 100 per cent completed and riveted.
erth-deck beams and carlings: 100 per cent completed and riveted.
fter-magazine floor beams: 100 per cent completed and riveted.
lat keelson plates: 100 per cent completed and riveted.
ighty per cent of the upper-deck stringer, deck, and tie plates in place and riveted.
[ain-deck stringer, deck, and tie plates in place and 95 per cent riveted.
[ain-deck waterway staples: 90 per cent completed.
ll berth-deck stringer, deck, and tie plates in place and 95 per cent riveted.
ll berth-deck stringer bars and staples in place and 90 per cent riveted.

Plating under after magazines: 100 per cent completed and riveted.
Plating under steering engine: 100 per cent completed and riveted.
All transverse bulkheads below berth deck completed and 95 per cent riveted.
All transverse bulkheads above berth deck completed and 90 per cent riveted.
Longitudinal coal bunker bulkheads: 100 per cent completed and riveted.
Longitudinal bulkheads in fore hold and abaft engine space: 100 per cent completed and riveted.
Longitudinal bulkheads of passage between boiler rooms: 100 per cent completed but not riveted.
Gutters on upper deck: 50 per cent completed and riveted.
Gutters on main deck: 50 per cent completed and riveted.
Hatch coamings on upper deck: 75 per cent completed and riveted.
Hatch and skylight coamings on main deck: 75 per cent completed.
Hatch frames and coamings on berth deck: 5 per cent completed.
Engine hatch casings completed and 50 per cent riveted.
Fire room hatch casing: 75 per cent completed and 50 per cent riveted.
Flooding arrangement of trimming tanks: 50 per cent completed.
Flooding arrangement of magazines: 50 per cent completed.
Main tiller, spare tiller, and other heavy forgings in connection with the steering gear completed and being machined.
Boiler bearers: 100 per cent completed, but not riveted.
Seatings for water tanks: 100 per cent completed and riveted.
Deck stanchions: 60 per cent in ship.
The armor for the 4-inch armored sponsons has been received and lined up, and the 4-inch sponsons are 10 per cent completed.
The hinged water-tight doors are 10 per cent completed.
Scuppers are 50 per cent completed.
Air-port castings have been received and are being machined.
The reenforcing plates at the air ports: 100 per cent completed and riveted.
Fresh-water tanks: 100 per cent completed, riveted, and in ship, but no piping belonging to same is fitted.
Water-tight manhole covers for the inner bottom spaces, trimming tanks, and fresh-water tanks are completed and in place.

Very respectfully,

J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF SUPERINTENDING CONSTRUCTOR, U. S. NAVY.,
NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY,
Newport News, Va., July 9, 1895.

SIR: In obedience to the instructions contained in the Bureau's letter No. 7402-95, of the 7th ultimo, I have the honor to submit the following special report of the work executed in connection with the construction of light-draft protected gunboat No. 9 from July 1, 1894, to June 30, 1895, inclusive:

At the beginning of the above period some material had been received at these works for the construction of this vessel and the keel blocks and building slip prepared for beginning work. The actual work of construction, however, had not been begun. The first keel plate was laid on the blocks of the building slip on October 16, 1894, and on the 30th ultimo the percentage of work completed, based on the vessel fitted out ready for sea, was estimated to be 47 per cent.

A detailed statement of the work done on the vessel up to the 1st of this month is given below, but it may be stated generally that the greater part of structural steel hull is completed; that the water-tight compartments are being tested preparatory to launching, the armor plates of gun sponsons are being fitted on the vessel, and that the general condition of the hull is such that it should be possible to launch this vessel some time in the month of September.

Only a moderate amount of work, however, has been done on hull fittings, and in view of this fact, I am of the opinion that it will not be possible to complete this vessel on the date called for by the contract, namely, January 29, 1896, but I estimate that it is possible to have the contractors' trial in May, 1896, and final delivery to the Government by July 1, 1896.

Photographs showing the condition of the vessel have been taken and will be forwarded as soon as received from the photographer.

The following is a detailed statement of the work done upon this vessel during the period reported upon:

Inner and outer flat keel plates: 100 per cent completed and riveted.
Vertical keel and angles: 100 per cent completed and riveted.

Stem: 100 per cent completed.

Forward, intermediate, and after stern-post castings: 100 per cent completed and in place and 50 per cent riveted.

Shaft tubes and castings at end of tubes: 50 per cent completed.

Steel castings for the upper strut arms: 100 per cent completed and riveted.

Both rudder-frame castings have been received.

Both rudder stocks have been forged and 50 per cent machined.

The carrier girders of rudders are 50 per cent completed.

The cast-steel rudder-stock stuffing boxes are 100 per cent completed, in place, and riveted.

Transverse framing in general: 100 per cent completed and riveted.

All longitudinals in general: 100 per cent completed and riveted.

Outside plating: 85 per cent completed, and of this 85 per cent riveted.

All doubling plates: 100 per cent completed and 90 per cent riveted.

Inner-bottom plating: 100 per cent completed and riveted.

Engine crank-pit pockets: 100 per cent completed and riveted.

Drain pockets on inner bottom: 100 per cent completed and riveted.

Upper-deck beams and carlings: 100 per cent completed.

Main-deck beams and carlings: 100 per cent completed and riveted.

Berth-deck beams and carlings: 100 per cent completed and riveted.

After-magazine floor beams: 100 per cent completed and riveted.

Flat keelson plates: 100 per cent completed and riveted.

Upper-deck stringer, deck, and tie plates: 80 per cent completed and riveted.

Main-deck stringer, deck, and tie plates: 90 per cent completed and 95 per cent riveted.

Main-deck waterway staples: 90 per cent completed.

Berth-deck stringer, deck, and tie plates: 100 per cent completed and 95 per cent riveted.

Berth-deck stringer bars and staples: 100 per cent completed and 90 per cent riveted.

Plating under after magazine: 100 per cent completed and riveted.

Plating under steering engine: 100 per cent completed and riveted.

All transverse bulkheads below berth deck: 100 per cent completed and 95 per cent riveted.

All transverse bulkheads above berth deck completed and 90 per cent riveted.

Longitudinal coal-bunker bulkheads: 100 per cent completed and riveted.

Longitudinal bulkheads in fore hold and abaft engine space: 100 per cent completed and riveted.

Longitudinal bulkheads of passage between boiler rooms: 100 per cent completed, but not riveted.

Gutters on upper deck: 50 per cent completed and riveted.

Gutters on main deck: 50 per cent completed and riveted.

Hatch coamings on upper deck: 75 per cent completed and riveted.

Hatch coamings and skylight coamings on main deck: 75 per cent completed and riveted.

Hatch frames and coamings on berth deck: 5 per cent completed.

Engine hatch casing: 100 per cent completed and riveted.

Fire-room hatch casing and hatch trunks: 75 per cent completed and 50 per cent riveted.

Flooding arrangement of trimming tanks: 50 per cent completed.

Flooding arrangement of magazines: 50 per cent completed.

Main tiller, spare tiller, and other heavy forgings in connection with steering gear have been made and are being machined.

The boiler bearers are 100 per cent completed, but not riveted.

Seatings for water tanks: 100 per cent completed and riveted.

Deck stanchions: 60 per cent completed and in place.

Hinged water-tight doors: 10 per cent completed.

Scuppers are 30 per cent completed.

Air-port castings received and are being machined.

Reenforcing plates at the air ports: 100 per cent completed and riveted.

Fresh-water tanks: 100 per cent completed, riveted, and in ship, but no piping belonging to same has been fitted.

Water-tight manhole covers to the inner bottom space, trimming tanks, and fresh-water tanks: 100 per cent completed and in place.

Very respectfully, J. J. WOODWARD,
Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF NAVAL CONSTRUCTOR FOR U. S. NAVY,
UNION IRON WORKS,
San Francisco, Cal., July 3, 1895.

SIR: (1) In accordance with the Bureau's instructions of the 7th ultimo, letter No. 7402-95, I have the honor to submit the following report, showing the work done on the U. S. S. *Olympia* from July 1, 1894, to January 26, 1895, the time the ship was removed from the Union Iron Works:

Item.	Condition July 1, 1894.	Condition Jan 26, 1895.
Flat keel	Completed	Completed.
Vertical keel	do	Do.
Stem	do	Do.
Sternpost	do	Do.
Stern frame	do	Do.
Rudder	do	Do.
Transverse frame	do	Do.
Flat keelson plates	do	Do.
Longitudinals	do	Do.
Outer plating	do	Do.
Inner bottom	do	Do.
Deck beams	do	Do.
Bridge beams	do	Do.
Skid beams for boats	do	Do.
Deck plating	do	Do.
Transverse and longitudinal bulkheads	do	Do.
Gutters on decks	do	Do.
Deck stanchions	do	Do.
Engine, boiler, and shaft bearers	do	Do.
Shaft tubes and struts	do	Do.
Water-tight doors	do	Do.
8-inch B. L. R. turrets	Completed except fitting urret armor and watershed.	Do.
Radial girders under turrets	Completed	Do.
Armored tubes to turrets	do	Do.
Turning tubes to turrets	do	Do.
Vertical armor to 5-inch guns	do	Do.
Vertical armor to 6-pounder guns	do	Do.
Conning tower	do	Do.
Hatch coamings and skylights	do	Do.
Cofferdams	Completed except filling with cellulose	Do.
Bilge keels	Completed	Do.
Ammunition lifts	Details to tops and bottoms to be altered and hoisting mechanism to be installed.	Do.
Magazines and shell rooms	Padlocks to be fitted to hatch covers, to flood cocks, and to light boxes.	Do.
Torpedo manipulating rooms	Completed	Do.
Torpedo stowage	Nothing done	Do.
Torpedo tracks	do	Do.
Torpedo port fittings	Completed	Do.
Passing scuttles	Completed except eyebolt and chain over after scuttle.	Do.
Entrance ports	Completed	Do.
Hammock berthing	do	Do.
Coal scuttles	do	Do.
Coaling chutes	do	Do.
Coal-chute plugs	do	Do.
Ash chutes	do	Do.
Chain lockers	do	Do.
Scuppers	do	Do.
Pumping and drainage	do	Do.
Plank sheers and waterways	do	Do.
Deck plank	Final calking, paying, and planing to be completed; to be shellacked in officers' quarters and elsewhere as directed; linoleum to be fitted in dynamo room; gratings to be fitted in torpedo-head rooms.	Do.
Water tanks	Locks to be fitted	Do.
Trimming tanks	do	Do.
Freeing ports	Completed	Do.
Refrigerating room	do	Do.
Prisons	Completed except locks	Do.
Firemen's wash room	Completed except clothes hooks	Do.
Crew's lavatory	do	Do.
Crew's water-closets	do	Do.
Steering arrangements	Completed	Do.
Chart house	do	Do.
Air ports	A few broken and imperfect lights to be replaced.	Do.
Deck lights	Completed	Do.
Ventilation	do	Do.
Forced draft	do	Do.
Masts	do	Do.

Item.	Condition July 1, 1894.	Condition Jan. 26, 1895.
and search-light tops	Completed	Completed.
e in coal bunkers	do	Do.
urses	do	Do.
hold, storerooms, etc	do	Do.
wning room	do	Do.
workshop	Completed, but to be shifted in location	Do.
s' workshop	Completed	Do.
s' log room	do	Do.
s' storerooms	do	Do.
r's workshop	do	Do.
om	do	Do.
	do	Do.
	do	Do.
	Completed; bars to be placed on board	Do.
es	Completed	Do.
pes	do	Do.
es	do	Do.
ts	do	Do.
pers	do	Do.
s in deck	do	Do.
and towing bitts	do	Do.
chocks	do	Do.
ks	do	Do.
le nippers	do	Do.
lavits	do	Do.
s	do	Do.
its	do	Do.
lles	To be fitted to boats and padded	Do.
tate and other rooms on main deck	Completed	Do.
lavatories	do	Do.
water-closets	do	Do.
s office	do	Do.
office	do	Do.
e officer's office	do	Do.
r's office	do	Do.
er's office	do	Do.
	do	Do.
ry	do	Do.
	do	Do.
	do	Do.
	Completed; galley outfit set up	Do.
m	Completed	Do.
and other storerooms	do	Do.
scuttles	do	Do.
tubes	do	Do.
ratings and covers to openings ective deck.	do	Do.
and hatch covers	do	Do.
nopies	Completed; to be placed on board	Do.
to hatchways, etc	do	Do.
nds or ladders	Completed	Do.
irons	do	Do.
side	do	Do.
	do	Do.
n's stools	do	Do.
ils and stanchions	do	Do.
furniture	Completed; to be placed on board	Do.
	do	Do.
e	Completed	Do.
kers for crew	Completed except two to be built in forward broadside torpedo room.	Do.
s for men's bags	Completed except a few rods still to be fitted.	Do.
ockers for petty officers	Completed	Do.
tables and benches for crew	Completed; to be placed on board	Do.
ls	Completed	Do.
eels	do	Do.
anes	do	Do.
eter and compass locker	do	Do.
t-arms's locker	do	Do.
kers	do	Do.
k hooks	do	Do.
ll	do	Do.
stanchions	Completed except jack rods on turret armor.	Do.
in beams	Completed	Do.
staples	do	Do.
plant	do	Do.
ents for rigging	do	Do.
forms	do	Do.
bolts and shackles for securing guns	do	Do.
nd fair leaders	do	Do.
	do	Do.
bbing plates	do	Do.
el plates	do	Do.

Item.	Condition July 1, 1894.	Condition Jan. 26, 1895.
Jacob's ladder	Completed	Completed.
Running lights	do	Do.
Life buoys	do	Do.
Swinging booms	do	Do.
Boats	Completed except trying boats afloat and placing them on board.	Do.
Chests and benches	Completed; to be placed on board	Do.
Miscellaneous outfit	do	Do.
Ensign staffs	Completed	Do.
Head and stern ornaments	do	Do.
Cement	do	Do.
Cleaning and painting	Ship to be cleaned and have final coat of paint throughout.	Do.

Very respectfully,

T. F. RUHM,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

OFFICE OF NAVAL CONSTRUCTOR FOR U. S. NAVY,
UNION IRON WORKS,
San Francisco., Cal., July 3, 1895.

SIR: (1) In accordance with the Bureau's instructions of the 7th ultimo, letter No. 7402–95, I have the honor to submit the following report showing the work done on the U. S. S. *Oregon* from July 1, 1894, to June 30, 1895, inclusive.

Item.	Condition July 1, 1894.	Condition June 30, 1895.
Flat keel	Completed	Completed.
Vertical keel	do	Do.
Stem	do	Do.
Sternpost	do	Do.
Stern frame	do	Do.
Rudder	do	Do.
Transverse frames	do	Do.
Outside plating	Completed except 8 plates to be removed in fitting belt armor.	Completed except 8 plates that were removed in fitting belt armor, and which are to be calked and tap-riveted to armor.
Flat keelson plates	Completed	Completed.
Inner bottom	do	Do.
Longitudinals	do	Do.
Transverse bulkheads	do	Do.
Longitudinal bulkheads	Completed below berth deck; on berth deck all erected and 60 per cent riveted.	Do.
Ammunition passages	Completed	Do.
Water-tight doors	Doors in place except in after 13-inch B. L. R. handling room; gaskets and locking arrangements to be fitted.	Completed except in after 13-inch B. L. R. handling room.
Deck beams	Completed	Completed.
Shaft struts	do	Do.
Bridge beams	do	Do.
Skid beams for boats	do	Do.
Plank sheers or waterways.	Completed except sheers around 13-inch barbettes.	Do.
Deck planking	Deck plank on main, superstructure, and bridge decks laid, but not yet calked.	All planking laid and preliminary calking completed.
Deck coating	Nothing done	Nothing done.
Gratings and hatch covers.	Gratings in auxiliary boiler room and engine hatches completed.	Gratings in chain lockers completed. Gratings in coal and passing scuttles completed. Gratings in engine, distilling room, boiler, and fan hatches completed. Storm covers to companion hatches on main deck completed. Wood covers and gratings 50 per cent completed.
Armor gratings in protective deck.	Engine hatch 80 per cent completed; boiler hatches completed; ventilation hatches 50 per cent completed.	Completed.

m.	Condition July 1, 1894.	Condition June 30, 1895.
or hatch cov-	Hydraulic gear in place to be secured; levers to be adjusted; eyebolts, etc., 50 per cent completed.	Hydraulic gear in place; levers to be adjusted; eyebolts, etc., 90 per cent completed.
cks	Completed	Completed.
munition	Tracks for 13-inch ammunition completed.	Tracks for 13-inch ammunition completed; tracks for 8-inch ammunition 98 per cent completed.
	Light boxes completed, and ammunition saddles 75 per cent completed in shops.	Light boxes completed; ammunition saddles 90 per cent completed in shops; woodwork 75 per cent completed.
	Light boxes completed	Light boxes completed; woodwork 60 per cent completed.
ition rooms	do	Do.
e magazines	do	Light boxes completed.
ipulating	Nothing done	Brackets 90 per cent completed; overhead trolley tracks 15 per cent completed.
les	Completed	Completed.
ngs on hull	Bow and stern tubes, shutters, and gear completed; broadside shutters and gear 75 per cent completed.	Bow and stern tubes, shutters, and gear completed; broadside shutters and gear completed; castings in place; hull work for bow and stern launching tubes completed.
ings, sky- inclosures.	Coamings completed; skylights 80 per cent completed; inclosures completed.	Coamings completed; skylights 98 per cent completed; inclosures completed.
	Completed and tested	Completed and tested.
ngements	All completed except connections with conning tower and pilot house.	Completed.
	Completed	Do.
	60 per cent completed	Do.
d fittings in arters.	Metal work 90 per cent completed; joiner work 50 per cent completed in shops.	Metal work 90 per cent completed; joiner work 80 per cent completed in shop, and 40 per cent completed in ship; authorized new metal bulkheads 50 per cent completed.
	Completed	Completed.
	do	Do.
nks	do	Do.
	Bulkheads completed	Bulkheads and doors completed.
shroom	do	Bulkheads completed; fittings 98 per cent completed.
-closets	Inclosure completed; fittings completed except urinals; tiling to be laid.	Completed except slight work in connection with urinals; tiling to be laid.
ry	Shower-bath bunkheads completed	Inclosure completed; fittings 90 per cent completed.
	90 per cent completed on ship	95 per cent completed on ship.
	Completed in shops	98 per cent completed on ship.
coal bunkers	Completed	Completed.
s, etc	do	Do.
l, storerooms,	Ceiling on berth deck just begun	Metal ceiling on berth deck removed; ceiling in hold completed.
ing room	Nothing done	75 per cent completed.
orkshop	do	Completed.
rkshop	do	Nothing done.
g room	do	25 per cent completed.
orerooms	Completed	Completed.
rthing	Completed except wood molding and lining.	Do.
les	Completed	Do.
s	Fixed chutes, 95 per cent completed; one portable chute completed.	Do.
	60 per cent completed	95 per cent completed; to be secured in place after belt armor is fitted.
r, and shaft	Completed	Completed.
room and room.	50 per cent completed	Do.
	Completed in shops; 95 per cent fitted.	Do.
ts and tops	Completed	Do.
	Bulkheads in place	Inclosure completed.
	Nothing done	90 per cent completed.
s	Completed	Completed.
	do	Do.
	do	Do.
	do	Do.
	do	Do.
	do	Do.
pumping	Completed in double bottom, and 70 per cent completed above double bottom.	Completed in double bottom; 98 per cent completed above double bottom.

Item.	Condition July 1, 1894.	Condition June 30, 1895.
Pumps	Completed	Completed.
6-inch gun sponsons	Completed except shutters	Completed except shutters; shutters 95 per cent completed.
6-pounder gun sponsons	....do	Completed except shutters; shutters 75 per cent completed.
1-pounder gun protection	Completed	Completed.
Feed tanks	....do	Do.
Ventilation	Casings and fans completed; pipes and valves 85 per cent completed; cowl ventilation 90 per cent completed.	Casings and fans completed; pipes and valves 97 per cent completed; cowl ventilation 97 per cent completed.
Ventilation of coal bunkers.	80 per cent completed	99 per cent completed.
Forced draft in fire rooms.	Casings completed	Completed.
Fresh and salt water service.	80 per cent completed	98 per cent completed.
Framing behind belt armor.	Completed	Completed.
Framing behind diagonal armor.	....do	Do.
Armor plating	All completed except belt armor; 13-inch B. L. R. barbette armor; and 13-inch and 8-inch B. L. R. turret armor.	All completed except belt armor; 13-inch B. L. R. barbette armor, and 13-inch and 8-inch B. L. R. turret armor; 8 plates belt armor, port side, in place; 3 plates on starboard side in place; 13-inch barbettes armor in place; work of securing 70 per cent completed.
Backing behind armor	Completed except for 13-inch B. L. R. turrets, and for 13-inch B. L. R. barbettes.	Completed except for 13-inch B. L. R. turrets.
13-inch B. L. R. turrets	Barbettes completed except wood backing and armor; turret shells 50 per cent completed in shops; live rings and 2 bottom roller paths completed in shops.	Barbettes completed except securing armor; turret shells completed in shops; live rings completed in shop; roller paths completed in shops.
8-inch B. L. R. turrets	Barbettes completed; turret shells completed; live rings 90 per cent completed; roller paths 75 per cent completed; turning tubes 80 per cent completed in shops; armored ammunition tubes completed.	Barbettes completed; turret shells completed; armored ammunition tubes completed; live rings, roller paths, and turning tubes in place; armor for one turret in place.
Conning tower, shield, tube, steps and foundations.	Completed	Completed.
Torpedo net booms	Nothing done	Nothing done.
Galley	Metal work of inclosure and coal bins completed.	Metal work of inclosure and coal bins completed; equipment 98 per cent installed; joiner work 60 per cent completed.
General and other storerooms.	Nothing done	92 per cent completed.
Officers' lavatories	....do	60 per cent completed.
Officers' water-closets	....do	15 per cent completed.
Captain's office	....do	Do.
Executive officer's office	....do	Bulkheads erected; joiner work 20 per cent completed.
Navigator's office	....do	Do.
Paymaster's office	....do	15 per cent completed.
Sick bay	....do	Inclosure completed; joiner work 15 per cent completed.
Dispensary	....do	Inclosure completed; joiner work 20 per cent completed.
Pantries	Bulkheads erected	Bulkheads erected; joiner work 5 per cent completed.
Armory	Nothing done	Completed.
Canopies to hatches	On main deck forward completed; on superstructure deck 40 per cent completed; on main deck aft 40 per cent completed.	Do.
Ladders to hatchways, etc.	Nothing done	85 per cent completed.
Iron rounds or ladders	90 per cent completed	96 per cent completed.
Carpenter's workshop	Nothing done	25 per cent completed.
Brass rubbing plates, etc.	....do	Nothing done.
Label plates	....do	77 per cent completed.
Jacob's ladder	....do	Nothing done.
Running lights	....do	Do.
Life buoys	Completed	Completed.
Swinging booms	Nothing done	Completed in shops.
Swinging tables and benches for crew.	....do	Nothing done.
Reels	....do	Do.
Hatch cranes	Completed	Completed.
Chronometer and compass locker.	Nothing done	Nothing done.

Item.	Condition July 1, 1894.	Condition June 30, 1895.
ıt-arms's inclosure	Nothing done	Nothing done.
ckers	do	Do.
irons	do	Completed.
(side), sea steps,	do	Side ladders 95 per cent completed in place; sea steps completed.
y boards	do	Teak pieces trimmed to shape.
rails and stan- ı.	Completed on main deck; superstructure and bridges 50 per cent completed.	Completed on main, superstructure, and bridge decks, on chart house and on boat-crane platforms.
ks and rifle racks.	Nothing done	Nothing done.
ıent for rigging, , bolts, etc.	do	Do.
ıcks	Completed	Completed.
g or towing bitts	do	Do.
g chocks	do	Do.
davits	do	Do.
beds	do	Do.
tts	do	Do.
ppers	Completed in shops	Do.
gear	Completed	Do.
rits and cradles	Davits completed	Davits completed; cradles completed except being leathered.
bes	Completed	Completed.
ruts	do	Do.
ıions for guns	Completed for 6-inch B. L. R.	Completed for 6-inch B. L. R. and for 6-pounders on bridge deck, and on hammock-berthing platform gratings for 6-pounders on hammock berthing 85 per cent completed.
bolts and shac- ır securing guns.	Nothing done	Nothing done.
for fair leaders	do	Do.
ck hooks	do	Do.
ell	Completed in shops	Completed in place.
stanchions	Completed on main deck	Completed.
s in beams	50 per cent completed	75 per cent completed.
staples	Completed	Completed.
g and painting ır iron work.	Work being kept painted	Work being kept painted; cork painting 65 per cent completed.
and signal staffs	Completed	Completed.
d stern ornaments	do	Do.
scuttles	do	Do.
g tubes	do	Do.
ıd clothes lockers ew.	Nothing done	Nothing done.
g, graining, and ing.	Work being kept painted	Work being kept painted.
ı room and elec- storerooms.	Dynamo foundations completed; storeroom bulkheads erected.	Dynamo foundations completed; 3 dynamos in place; storeroom bulkheads erected.
pes or telephones, ıls, etc.	Nothing done	86 per cent completed.
water-tight com- ents, tanks, etc.	Completed	Completed.
ts in deck	A few completed forward	60 per cent completed.
e furniture	Just begun in shops	75 per cent completed in shop.
ge	70 per cent completed	95 per cent completed.
ıneous outfit	Nothing done	Nothing done.
	Steam cutters 95 per cent completed; other boats begun.	Steam launch and steam cutter completed except steering gear; 4 cutters 80 per cent completed; 2 dinghys 80 per cent completed; 2 whaleboats 25 per cent completed; sailing launch 25 per cent completed; whaleboat gig 90 per cent completed.
ıering	Nothing done	Nothing done.
to pipes, valve etc.	do	45 per cent completed.
ı' walks and stools ıdsmen.	do	Leadsmen stools completed; sentries' walks 90 per cent completed.
s for spare coal	do	Nothing done.
ılates	do	Do.
or other coatings ıuble bottom and here.	75 per cent completed	95 per cent completed.

ıy opinion this vessel is 91 per cent completed, on the basis that 100 per cent ction represents her condition when ready for sea, in all matters coming under gnizance of the Bureau of Construction and Repair.

All the armor except the two side-armor shutter plates and the 13-inch B. L. R turret armor has been received.

If there be no delay in the delivery of this armor not yet received the U. S. S *Oregon* will, in my opinion, be ready for her official trial trip by November 20, 1895 and for delivery to the Government by January 1, 1896.

Very respectfully,

T. F. RUHM,
Assistant Naval Constructor, U. S. N., Superintending Constructor.

The CHIEF OF BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department, Washington, D. C.

Reports from naval constructors concerning necessary improvements in navy-yard plants.

The following reports from naval constructors were submitted in compliance with orders from this Bureau, and show the improvements necessary to put the navy-yard plants in proper condition:

NAVY-YARD, PORTSMOUTH, N. H., *July 5, 1895.*

SIR: In obedience to the order of the Bureau of Construction and Repair No 7401-95, dated June 7, 1895, I submit the following report, viz:

I would respectfully recommend that the second story over the ship fitter's shop in building No. 46, be fitted for a joiner's shop, and that the rooms now occupied by the joiner, in building No. 14, be used for block and cabinet shops, and that the rooms on the lower floor of this building be changed, and that doors be cut in each end, of sufficient size to admit a loaded train to pass through. I also recommend that the position of the double-surface planer on this floor, which now sets at right angle to the main shaft, be changed to a position parallel with the shaft, thus increasing its efficiency. There should also be fitted on this floor a lamp room, properly finished to make it fireproof.

I also recommend that the power for the boat-shop machines be transmitted and connected with a three-inch steam pipe to the new boilers in steel plant building which would dispense with a fireman and save the cost of about 12 to 13 tons of coal per month.

I would also recommend that the shaft in the ship fitter's shop be extended across the avenue to building No. 14, now the joiner's shop, thereby dispensing with the use of the engine and boilers in this building, also the services of an engineer and fireman. This would make a saving also of the cost of about 26 tons of coal per month. Ample power for running the machinery in this building can thus be obtained.

I would also recommend that the north end of building No. 46 be fitted for a brass foundry in connection with the ship fitter's shop, as the building on Seavys Island now used as a foundry, needs considerable repairs and is not conveniently located for the foreman in charge. This change would add very much to the facility of doing work with dispatch and economy. I also recommend that a beam shed be provided and located as shown on accompanying plan marked A, this building to cover a space of 40 by 60 feet, to be provided with six forges and two cranes and overhead trolleys, also pickling tanks and plate racks, as shown on plan A, submitted.

The relative urgency of the various improvements, alterations, and additions is in the order as written in the following summary, showing the estimated cost of the proposed improvements:

Fitting joiner's shop over ship-fitting shop	$4,000.0
Alterations and changes in building No. 14	3,000.0
Fitting building No. 40 for brass foundry	2,500.0
Building beam shed, pickling tank, and plate racks	6,500.0
Connecting steam pipe to boat-shop engine	900.0
Extending shafting from building No. 46 to building No. 14	800.0
Apparatus for heating angle and plate furnaces	3,400.0
Plate-straightening rolls	4,000.0
Total	25,100.0

Plan of the yard marked A, showing the proposed improvements, is herewith submitted.

Very respectfully,

JOHN B. HOOVER,
Naval Constructor, U. S. N.

To the COMMANDANT,

UNITED STATES NAVY-YARD, BOSTON, *July 10, 1895.*

SIR: (1) In compliance with Bureau's order No. 7401-95, dated June 7, 1895, request-ng a report from the general foreman in charge of department of construction and epair suggesting improvements, alterations, or additions to the construction plant, ould respectfully state as follows:

(2) I would approve the recommendations relative to the alterations and additions ientioned in letter from general foreman in charge of department construction and epair, dated July 12, 1894, and which is contained in Annual Report of the Chief of he Bureau of Construction and Repair for the fiscal year ending June 30, 1894, pages l to 75, inclusive. Two sets of plans were sent with the other reports and filed at ureau.

(3.) But, in addition to the above reports previously made, I consider that a wooden ry dock of sufficient size to take the largest vessel that we now have under con-ruction, or may be likely to design in the future, should be built at this yard. here is great need of greater and better docking facilities for vessels of the Navy, d a dock such as I have referred to can be best and most economically built on the ortheast side of building No. 24, and about equally distant from the present stone ry dock. The basin which now exists is a natural one, and seems formed by nature self for the location of such a dry dock. A dock of this kind could be built of ood in very much less time and at less cost than it would take to make alterations the present stone dock, thereby having two docks, and in this connection, as a atter of economy and dispatch, the two docks coming near together with the pres-nt dock engine and boiler house between them, they could be pumped out by the ew pumps and boilers now in use for the present dry dock. Taking into considera-on the building in which they are located and the chimney some 124 feet high, this a combination of building, engine pumps, boilers, and chimney that could not be uplicated in any other part of the yard for less than $150,000. Such a dock could, y utilizing the present arrangements and location, be built of wood at a cost of bout $600,000. It would then take in any ship of the Navy or merchant marine if ecessary, and would be invaluable to the Government.

Very respectfully,

THEODORE D. WILSON,
Naval Constructor, U. S. N.

To the COMMANDANT.

NAVAL CONSTRUCTOR'S OFFICE, UNITED STATES NAVY-YARD,
Boston, July 12, 1894.

SIR: (1) In compliance with Bureau's order No. 7501-94, dated June 12, 1894, I have the honor to submit the following report, suggesting alterations and additions to construction plant which will, in my opinion, enable the work to be performed more promptly and economically than at present.

(2) Three plans, A, B, and C, relative to ship-fitting machine shop, showing structure of building and location of tools, are herewith submitted.

Plan A shows position of tools as at present. Plan B shows proposed change in line shafting, location of tools, etc. Plan C gives transverse sections at various points in building; shows lead of and quarter turn in main driving belt required by change in direction of line shafting proposed. Plan D shows proposed building for plate rack and forge shed, with its location relative to adjacent buildings. Blue print E shows end elevation of building No. 36, with proposed door shown in red.

SHIP-FITTING MACHINE SHOP.

(3) Proposed change in line shafting, tools, etc.: By reference to plan A it will be readily seen that no adequate provision has been or can be made for transportation of material to and from tools either by traveling crane H or trolleys, owing to location of beams, shafting, belts, etc.

Plan B provides for a change in run of line shafting from a transverse to a longitudinal position in shop, turning and rearranging the tools to correspond, cutting of center portion of and lowering beams, providing platforms and walks over same, thus allowing the use of traveling crane H (now useless), and for longitudinal and transverse trolleys to material and tools. The building should also be brought down to grade, and the railroad track continued down its center, as shown on plan. It is therefore recommended that plan B be adopted and changes made to correspond therewith.

Estimated cost.

Labor	$3,540
Material	2,214
Total	5,754

PLATE RACK AND FORGE SHED.

(4) An iron building for storage of plate steel angles and other shapes, fitted with a traveling crane and the necessary rack for holding plates on edge, is recommended (see Plan D). It is also recommended that the extension E (see Plan D) be utilized as a forge shed and fitted with a rotary crane, for convenience in handling plates, beams, etc.

Estimated cost.

Labor	$12,707
Material	5,429
Total cost, buildings	18,136

(5) Proposed addition to boiler and engine room. With a view to providing room for an additional boiler, the electric, hydraulic, and air-compressed plant, it is recommended that the present frame engine and boiler house (see plan A) be removed, and that the space between the tool room T and bending-roll shed U, 68 feet 1¼ inches in length, be utilized for the purpose of having a transverse section like N O (see Plan C). In order to bring the above plant wholly under the eye and control of engineer in charge, it is recommended that the end of tool room V W be moved to X Y (see Plan B).

Estimated cost.

Labor	$3,520.00
Material	1,448.21
Total	4,968.21

PICKLING TANKS AND CONNECTIONS.

(6) The locations of pickling and fresh-water tanks are shown on Plan D, at end of plate rack, and are located with a view to convenience in handling plates. Plates selected for use are taken from rail truck as it leaves the building by an 18-foot jib crane (available for the purpose) and readily deposited in either tank. These tanks will be of the following (in the clear) dimensions: Length, 25 feet 3 inches; breadth, 2 feet 2 inches; depth, 6 feet 6 inches; to be built of 3-inch white pine and lead-lined. The tank pits will be brick-lined, laid in cement, and made water-tight.

Estimated cost.

Labor	$658
Material	620
Total	1,278

BOILERS.

(7) Boilers Q and R, now in position (see Plan A), require repairs; the water legs leak, and steam above 70 pounds pressure is forbidden. These boilers when in good condition will not furnish sufficient steam for all purposes, when shop and sawmill are in full operation. It is therefore recommended that the two boilers, nearly new and no longer required for dry-dock use (new boilers and engines having been supplied), be taken for the purpose, boiler R be thoroughly repaired, and all put in good condition.

Estimated cost for transportation, uptake connections, and repairs.

Labor	$1,025
Material	250
Total	1,275

(8) Proposed doors in end of building No. 36 (joiner shop): In the construction of this building no provision has been made in size of doors in basement story to admit of loaded teams, in consequence of which all material for use of workmen in the different departments has to be unloaded outside and taken in by hand. At present the basement story is occupied as a boat shop and by the necessary heave tools, planers, saws, etc. I have therefore to recommend, for convenience in removing large boats, admission of loaded teams, and additional light, now much needed, that a door be cut in each end of building, as shown on Plan E in red dotted line.

Estimated cost.

Labor	$1,350
Material	650
Total	2,000

(9) *Schedule of tools and material required for construction plant under Bureau order*

1 set plate-straightening rolls, pulley driven, with friction clutches; 6 rolls, 12 inches diameter, 98 inches between housings. Estimated price complete and in position	$4,000.00
1 horizontal flange punch, 8-inch throat, capable of punching 1-inch steel plate or angle; to be pulley driven, pulleys 24 inches diameter, 6¼-inch face, speed 176 revolutions. Estimated cost complete and in position	825.00
1 horizontal flange punch, 42-inch throat, capable of punching ⅝-inch steel plate; to be pulley driven, pulleys 24 inches diameter by 6¼-inch face, speed 176 revolutions. Estimated price complete and in position	1,400.00
1 double angle shear, capable of shearing angles 6 by 6, pulley driven, pulleys 24 inches diameter by 6¼-inch face, speed 230 revolutions. Estimated price complete and in position	1,000.00
2 No. 2 combined punch and shear complete, with electric motor for driving same equal to Hills & Jones Co., as per catalogue, page 22. Estimated price, each complete and ready for use, $1,250	2,500.00
1 electric dynamo and attachments complete, including switchboard, containing armature, voltmeter, and double-pole switch, slate mounted, machine to run 1,200 revolutions of the armature per minute, and develop an electro-motive force of 125 volts and a current of 200 amperes. Estimated cost, delivered at this station, set up, and run for approval	1,190.00
2 shunt-wound drill motors, capable of developing 4 horsepower by brake, with a difference of potential of 100 volts, each motor to be provided with a strong oak base swivel truck and 100 feet of flexible wire connection. Estimated cost per motor, $750	1,500.00
100 50-candlepower Edison lamps of 100 volts; 200 20-candlepower Edison lamps of 100 volts; 100 pounds insulated wire. Estimated cost	320.00
1 20-horsepower portable engine and boiler, with frame-truck hoisting gear, belt pulley, and independent steam pump, boiler to be a vertical cylinder 42 inches in diameter, 8 feet high, containing 85 2-inch tubes 60 inches long; engine to be double-cylinder type, cylinder 7 inches diameter, stroke of piston 12 inches; must have power to lift a weight of 5,000 pounds, estimated total weight 6,000 pounds. Estimated cost	1,250.00
1 heavy pulley-block traveling crane, equal to the Yale & Towne, having a span of 26 feet, capable of transporting a weight of 10,000 pounds, to be provided with trolley, pulleys, and propelling gear complete. Estimated cost, ready for use	1,100.00
1 suspended rotary bridge crane, including suspended track connections, fitted with three arms, trolley and pulley to each, each arm, with its trolley, pulley, and connections, to be capable of lifting 6,000 pounds, length of arms 24 feet, to be equal to the Yale & Towne crane. Estimated cost, ready for use	1,200.00
2 No. 9 Stow portable drills and all attachments complete. Estimated cost, each $220	440.00
2 No. 6 Stow portable drills and all attachments complete. Estimated cost, each $157	314.00
2 cutting-off circular saws, 26 inches diameter, mandrel hole 1⅝ inches diameter, No. 7 gauge. Estimated cost, each $12	24.00
1 circular saw, splitting, 26 inches diameter, mandrel hole 1⅝ inches diameter, No. 10 gauge. Estimated cost	12.00
1 cutting-off circular saw, 17 inches diameter, mandrel hole 1 inch diameter, No. 12 gauge. Estimated price	6.00
1 cutting-off circular saw, 12 inches diameter, mandrel hole 1 inch diameter, No. 15 gauge. Estimated price	3.00
1 circular saw, splitting, 17 inches diameter, mandrel hole 1 inch diameter, No. 12 gauge. Estimated cost	6.00
1 Hoe patent steel duplex swage for large circular saws. Estimated cost	350.00
1 No. 1 double-geared saw gummer for large circular saw. Estimated cost	20.00
1 automatic knife-grinding machine, to grind planer knives, 30 inches long. Estimated cost, ready for use	150.00
1 dozen steel boiler clamps, to open 4 inches from center of screw to run back 4½ inches. Estimated cost	48.00

1 box containing a set of Grant's No. 1 diestock, dies, taps, taper plug, and bottoming tap, $\frac{1}{4}$ to 12 inch. Estimated cost	$24.60
1 box containing a set of Grant's No. 2 diestock, dies, taps, taper plug, and bottoming tap, $\frac{5}{16}$ to $\frac{3}{4}$ inch. Estimated cost	37.00
1 box containing a set of Grant's No. 3 diestock, dies, taps, taper plug, and bottoming tap, $\frac{1}{2}$ to 1 inch. Estimated cost	45.00
1 box containing a set of Grant's No. 4 diestock, dies, taps, taper plug, and bottoming tap, 1 to $1\frac{1}{2}$ inches. Estimated cost	90.00

(10) MORSE PATENT INCREASED TWIST DRILLS.

1 dozen $\frac{1}{4}$-inch	$7.20
1 dozen $\frac{5}{16}$-inch	7.80
1 dozen $\frac{3}{8}$-inch	9.60
1 dozen $\frac{7}{16}$-inch	10.80
1 dozen $\frac{1}{2}$-inch	12.00
1 dozen $\frac{9}{16}$-inch	14.40
1 dozen $\frac{5}{8}$-inch	16.80
1 dozen $\frac{11}{16}$-inch	19.20
1 dozen $\frac{3}{4}$-inch	22.20
1 dozen $\frac{13}{16}$-inch	25.80
1 dozen $\frac{7}{8}$-inch	29.40
1 dozen $\frac{15}{16}$-inch	33.00
1 dozen 1-inch	36.00
1 dozen $1\frac{1}{16}$-inch	40.80
1 dozen $1\frac{1}{8}$-inch	45.60
1 dozen $1\frac{3}{16}$-inch	50.40
1 dozen $1\frac{1}{4}$-inch	54.00
Estimated total cost	435.00

(11) LEATHER BELTING.

70 feet 24-inch belting (leather link), at $6	$420.00
250 feet 24-inch belting (leather double), at $6	1,500.00
100 feet 9-inch belting (leather double), at $1.73	173.00
600 feet 6-inch belting (leather double), at $1.14	684.00
200 feet of $4\frac{1}{2}$-inch belting (leather double), at 84 cents	168.00
500 feet 4-inch belting (leather double), at 75 cents	375.00
300 feet of $3\frac{1}{2}$-inch (leather double), at 65 cents	195.00
250 feet 3-inch belting (leather single), at 36 cents	90.00
Estimated total cost	3,605.00

(12) HYDRAULIC PLANT.

1 hydraulic ram accumulator pump and connections complete, ram 12 inches diameter, 16-inch stroke, and capable of exerting a pressure of 2,000 pounds per square inch. Estimated cost, complete and in running order.	$2,200.00

HYDRAULIC RIVETERS.

1 hydraulic riveter, capable of riveting plates 36 inches wide, and rivets 1 inch diameter. Estimated cost	$550.00
2 hydraulic riveters, capable of riveting plates 54 inches wide, and rivets 1 inch diameter. Estimated cost, each, $750	1,500.00

Recapitulation.

New buildings.	Labor.	Material.	Total.
Ship fitters' machine shop	$3,540.00	$2,214.00	$5,754.00
Plate rack and forge shed	12,707.00	5,429.00	18,136.00
Boiler and engine room, proposed additions to	3,520.00	1,448.21	4,968.21
Pickling tanks and connections	658.00	620.00	1,278.00
Boilers	1,025.00	250.00	1,275.00
Proposed door in end of building No. 36 (joiner shop)	1,350.00	650.00	2,000.00
Total cost	22,800.00	10,611.21	33,411.21

Recapitulation—Continued.

New tools.	Total cost.	New tools.	Total cost.
raightening rolls	$4,000.00	1 duplex swage	$350.00
ntal flange punch	825.00	1 double-geared saw gummer	20.00
	1,400.00	1 automatic knife grinder	150.00
angle shear	1,000.00	1 dozen boiler clamps	48.00
combined punches and shears, 250	2,500.00	1 box No. 1 taps and dies	24.00
c dynamo	1,190.00	1 box No. 2 taps and dies	37.00
wound-drill motors, at $750	1,500.00	1 box No. 3 taps and dies	45.00
on lamps and wire	320.00	1 box No. 4 taps and dies	90.00
le engine and boiler	1,250.00	17 dozen Morse patent drills	435.00
pulley-block traveling crane	1,100.00	Leather belting, 2,270 feet	3,605.00
nded rotary bridge crane	1,200.00	Hydraulic plant	2,200.00
portable drills, No. 9, at $220	440.00	1 hydraulic riveter	550.00
portable drills, No. 6, at $157	314.00	2 hydraulic riveters, at $750	1,500.00
ar saws, 26 inch, at $12	24.00	Total new tools	26,144.60
ar saw, splitting, 26 inches	12.00	Total new buildings	33,411.21
ar saw, 17 inches	6.00		
ar saw, 12 inches	3.00	Grand total	59,555.81
ar saw, splitting, 17 inches	6.00		

Very respectfully,

WM. HICHBORN,
General Foreman in Charge Department Construction and Repair.

COMMANDANT.

NAVY-YARD, LEAGUE ISLAND, PA., *July 26, 1895.*

In compliance with the Bureau's letter No. 7401-95, dated June 7, 1895, desir- report relative to the improvement, alteration, or addition to the construction of this yard, I respectfully submit the following, the general plan being much me as my report of last year: At that time I submitted a set of twelve plans. ring to these plans, and taking up the several proposed improvements in their of immediate importance and classing them under the head of "Immediate ements" and "Future improvements," I beg leave to invite attention to the liate need of an engine and boiler house.

IMMEDIATE REQUIREMENTS.

ine house.—The fine 150-horse power engine for running the iron-plating shop, led in 1893, has been under a temporary wooden shed ever since, and a new ng, such as is shown on plan 2, is recommended, the estimated cost being

er house.—The boilers (two in number) which were erected in 1893 and are to y the sawmill and ship-fitting shop with power, are housed in a temporary n structure, which is very much cramped and dangerous in case of fire. It is ore recommended that a building such as shown on plan No. 3 be erected. uilding, composed of iron and corrugated galvanized iron, it is estimated can t up for $3,400.

naces.—This yard labors under a great disadvantage in not being provided angle and plate furnaces. Plans 10, 11, and 12, show general outlines of pro- angle and plate furnaces similar to those in use at Sparrow Point. These es, including bending slabs, could be erected at a cost of about $13,800.

t shop.—The next in importance is a boat shop. There is no boat shop proper at ard. The old frigate house has been utilized as a boat shop, but at considerable vantage as regards economy and dispatch of work. The building being frame, pproximately fifty years old, can not last much longer at its best. Although pports have been looked after and repaired, where found needed during the ear, the building is not as safe as it should be. The boat shop located in the l story is unhandy for the admission and exit of boats; it is dark in the shop e floor is shaky and unreliable. The danger of the building collapsing under ng wind or being destroyed by fire is advanced as a reason why it should be oned and a suitable place built, where human life and Government property be safe. I therefore recommend the erection of a brick building 400 feet by , exterior dimensions, two stories high, to be located as shown on plan No. 1; ound floor of this building to be used as shown on plan No. 8 as a boat-building for boat repairing and painting, and the north end as cooper and block shops.

The engine running the joiner-shop tools is located only 60 feet to the east of the proposed boat shop, and this engine is of sufficient capacity to run all the machine tools in the proposed shop. As the erection of this boatshop would necessarily come under future permanent improvements, and as this old frigate house will last but little longer, I would urgently recommend that authority be given to utilize the lower floor of the building designated on plan No. 1 as mold loft and joiner shop. To put this floor in condition for such purpose it will require a new flooring of wood, the present flooring being of cement and in a very bad condition, it being placed directly on top of the earth and has settled unequally, in some places as much as 6 inches. It is proposed to cut through this cement floor across the shop in the wake of each pillar and place timbers 12 by 16 inches upon the foundation stones of the pillars and walls of the building. These timbers are to project about 3 inches above the cement floor and in the intervals timbers are to be laid on top of the cement, upon which again planking 3 inches in thickness will be laid fore and aft. The light of this floor is poor, owing to the small size of the windows; but as these windows are built in pairs this objection can be readily overcome by installing one large window in the place of the two small ones. The estimated cost of making the changes to this building would be $9,700. Upon the erection of the proposed boat shop and mold loft this floor could be utilized to great advantage for the stowage of boats, these buildings being located within a short distance of each other and in close proximity to the docks.

Tools for ship-fitting shop.—The following additional tools are recommended to be purchased for this shop:

Two 16-inch screw-cutting lathes, at $500	$1,000
One 20-inch screw-cutting lathe	800
One Acme double-head screw-cutting machine	600
Two radial drill presses, 60-inch, at $1,100	2,200
One triple-gear shaping machine	400
Three grinding machines, emery wheels, at $100	300
One 2 by 24 foot turntable turret lathe	1,100
One hand bending rolls, 4 by 48 inches	100
One centrifugal chip and waste cleaner	125
One multiple drilling machine	2,800
One grindstone with iron frame, complete	80
One Detrick & Harvey open-side planer	3,000
One plate shearer 8 inches between housing	4,000
One heavy vertical milling machine with angular motion	1,200
One small milling machine	300
One small drill press	100
One small engine lathe	260
Three sets Morse twist drills, ¼-inch to ½-inch	75
Total	18,446

The following tools and appliances under the proposed ship-fitting shed are recommended:

Plate and angle furnace	$9,000
Bending slabs	4,800
Hydraulic keel-plate bender	8,000
Tanks and cranes for pickling plates	2,500
Total	24,300

FUTURE IMPROVEMENTS.

Ship-fitting shop.—As the work in this shop requires considerable handling from one machine to another while being worked, and the introduction of heavy armor for our modern ships necessitates the introduction of some permanent mode of lifting and carrying this work, I would therefore recommend the installation of an electrical traveling crane of 20 tons capacity; also an 80-horsepower generator for furnishing the power to this crane. I would further recommend that the framing for carrying this crane be built entirely separate from the main framing of the building. This could be accomplished by building box columns and stepping them on the same foundation as supporting columns of building. These columns would receive girders for carrying crane and be securely tied to main columns with tie plates, making the whole a strong and safe construction.

Estimated cost of crane	$12,800
Estimated cost of generator, wiring, etc	2,550
Estimated cost of columns, girders, etc	7,000
Total	22,350

Ship-fitting shed.—To carry on repairing work upon ship at the wharves or in dock with dispatch and economy, a ship-fitting shed, as shown on plans 4 and 5, is recommended. The proposed structure is 274 feet by 100 feet and in close proximity to the ship-fitting shop. Only iron and glass are used in its construction. The sides consist solely of sliding doors, each door sliding inside and outside of the posts. This arrangement is labor saving, in that it is possible to take work out of the building at any part of it with less handling than where doors are placed at certain intervals. Then, again, light and ventilation can be had to a greater extent, making it convenient for carrying on such work as can not be accommodated in a ship-fitting shop. It is suggested that under this shed should be located the furnaces and bending slabs, the scrive board, plate-pickling baths, hydraulic keel-plate bender, and such smaller tools as punches, shears, multiple drills, etc., as require considerable space when working long plates and angle bars.

It is further contemplated to place the brass foundry and tinning, plumbing, and galvanizing shops under the roof of the ship-fitting shed. The present brass foundry is located near the steam engineering building, and is not in a convenient place. The house is of frame, and as all the buildings on the yard ought to be made as nearly indestructible as possible, it is recommended that a new brass foundry be built upon the space designated on plan 4, to be constructed of the same material and uniform with the new boiler house proposed. A tinning and plumbing shop has been fitted up in the north end of the blacksmith shop, and will suit the purpose for some years, but the most suitable location of the shops is undoubtedly that indicated on plan 4, incorporated under the ship-fitting shed.

I beg leave to urgently recommend an appropriation for this ship-fitting shed, as it must prove itself a great convenience for work that can not well be carried on in the ship-fitting shop, and it would do away with the erection of detached shops and buildings, such as the boiler house, brass foundry and plumbing, tinning, and galvanizing shops. The estimated cost of this ship-fitting shed is $58,221; the cost of the proposed new boiler house is $3,400. Allowing $3,400 for each of the other two buildings covering the brass foundry and the plumbing, tinning, and galvanizing shops, there is a total of $10,200. If these buildings were erected, and in the course of time it is found desirable to erect a ship-fitting shed, then these buildings would have to be removed, and the first outlay would be an almost entire loss.

Smithery.—The present smithery is a frame building constructed about eighteen years ago. It is 254 by 40 feet and 20 feet high under the eaves. Three years ago this building was thoroughly repaired, and is probably good for eight or ten years. The north end contains the engines and boilers, occupying 64 feet in length, next to which a space of 28 feet has been fitted up as a tinning, plumbing, and copper shop, leaving 191 feet for the smithery proper. This space accommodates 18 fires and 3 steam hammers of 200, 400, and 800 pounds, respectively. These hammers, though, are very much out of date and of the slow-striking type. I would therefore recommend the purchase of two additional ones of 500 and 1,000 pounds, respectively. Estimated cost of hammers, $1,000.

I would also recommend canopies over each forge to carry off the smoke, which accumulates in great quantities when fires are started. Estimated cost of canopies, $650. The capacity for work is very limited, owing chiefly to the lack of heavy hammers; nor would it be possible to introduce any of the larger sizes, because of the limited space in every direction. The chief objection to this structure is the material of which it is built, and it would not be advisable to either enlarge it or introduce any very large hammers. While it is not likely that a suitable shop will be built for some years, I have anticipated such a contingency and outlined in a general way my idea of a smithery capable of turning out all the work that may be demanded from a thoroughly equipped navy-yard. Its proposed location is indicated on plan 1, and general plans and arrangements are shown on plans 6 and 7. It contemplates two separate shops 400 feet in length, with an L at each end of 56 feet, and 75 feet outside width.

These buildings are placed so as to form a quadrangle with a driveway of 20 feet between them, giving access to the interior space between the buildings, 125 by 250 feet. The engines and boiler houses are located in this courtyard. The west building is to be used for heavy forging and angle smithery. It will contain four reverberatory furnaces, assorted heavy steam hammers, and an overhead traveling crane operated by electricity. To prevent as much as possible the accumulation of smoke, which usually fills the shops in the morning when fires are started and during muggy weather when there is little draft, it is proposed to fit a canopy over each fire, to which a pipe is attached, the latter communicating with a central flue running underground through the entire length of the shop out into the smokestack in the yard. I believe that a suction of air through this main flue, induced by fans, would greatly reduce, if not entirely remove, the dense smoke which otherwise would have no outlet, except through the roof, skylight, or open windows.

The east building is designed for general ship-smith work, and contains 61 forges, steam hammers, and other appliances, and sufficient space for material required to be kept on *hand for daily use*. The estimated cost of these two smitheries is *$310,000.*

In conclusion, I beg leave to summarize the recommendations contained in this letter under "Immediate requirements" and "Future improvements," in the order of their importance.

IMMEDIATE REQUIREMENTS.

Permanent building improvements.

Engine house	$6,800
Boiler house	3,400
Alteration to construction building for boat shop	9,700
Total	19,900

Tools and appliances.

Tools for ship-fitting shop	$18,440
Furnaces	9,000
Bending slabs	4,800
Pickling tanks	2,500
Steam hammers	1,000
Canopies over blacksmith forges	650
Total	36,390

FUTURE IMPROVEMENTS.

Permanent buildings.

Ship-fitting shed	$58,221
Boat shop and mold loft	150,000
Smitheries	310,000
Total	518,221

Tools and appliances.

Hydraulic keel-plate bender	$8,000
Electric motor plant	10,000
Traveling crane for iron plating shop	12,800
Columns and girders for carrying crane	7,000
Generators for furnishing power to crane	2,550
Total	40,350

RECAPITULATION.

Immediate requirements.

Total for permanent building improvements	$19,900
Total for tools and appliances	36,390
Total for immediate requirements	56,290

Future improvements.

Total for permanent building	$518,221
Total for tools and appliances	40,350
Total for future improvements	558,571

I would further respectfully invite attention to the roofs of the following construction buildings, viz, ship-fitting shop, mold loft, sawmill, and smithery. The two former have valuable machinery installed in them, which has to be carefully cared for at some expense, as it is necessary to clean some of them after nearly every rain storm, and besides the injury to the tools the buildings must necessarily deteriorate in the course of time from leaky roofs.

Very respectfully,

JOSEPH FEASTER,
Naval Constructor, U.S.N.

The COMMANDANT.

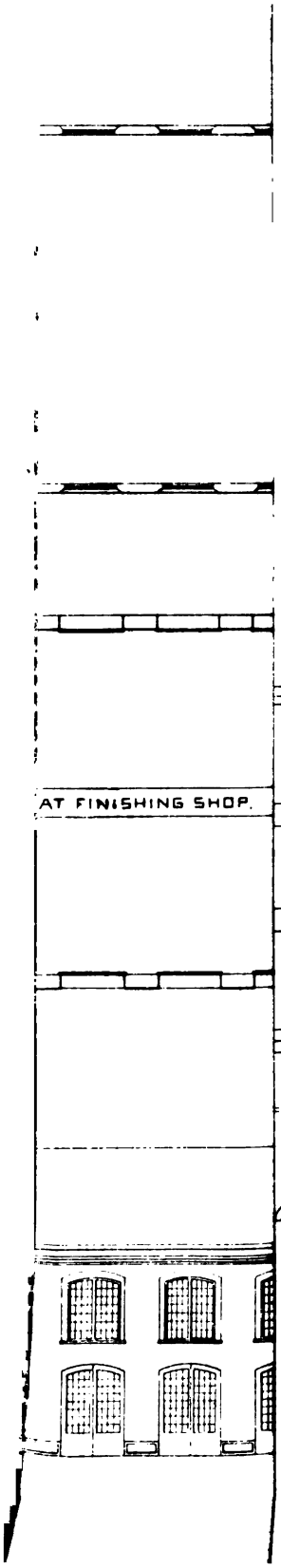
J. H. Gladstone

N. C. U. S. Navy.

V E R

THE HARRIS-PETERS PHOTO-LITHO. WASHINGTON D. C.

PLATE VIII.



BUILDING

COOPER SHOPS

OFT

EAGUE ISLAND.

= ONE FOOT.

J. Hoskin

U. C. U. S. Navy

THE NORRIS PETERS CO. PHOTO LITHO. WASHINGTON, D. C.

UNITED STATES NAVY-YARD,
Norfolk, Va., July 17, 1895.

IR: In compliance with the instructions of the letter of the Bureau of Construc-
n and Repair, No. 7401-95 of June 7, 1895, I would respectfully report:
1) My report No. 764-94 of July 3, 1894, embodies such suggestions as in my opin-
are desirable for the improvement of the construction plant at this station.
2) For the work now in hand or which can be anticipated in the near future, the
istruction department is well equipped.

Very respectfully,

FRANCIS T. BOWLES,
Naval Constructor, U. S. N.

'he COMMANDANT, NAVY-YARD, NORFOLK, VA.

UNITED STATES NAVY-YARD,
Norfolk, Va., July 3, 1894.

IR: In compliance with the instructions of the letter of the Bureau of Construc-
ı and Repair, No. 7501-94, of June 12, 1894, I have the honor to submit the fol-
ing suggestions for the improvement of the construction plant at this navy-yard,
l to enable the work of this department to be performed with increased economy
l rapidity.
s the work in this department is in many respects dependent upon the general
angement and facilities of the navy-yard, I have included certain recommenda-
ıs upon matters not immediately under the direction of the Bureau of Construc-
ı and Repair, and in addition to the necessities of the shops of this department.
l) Dry dock No. 1 (stone dock) is limited in capacity to vessels of the size of the
zuta, and if lengthened 100 feet could be used for all the cruiser class of vessels,
ich would increase its usefulness to a very large extent.
2) Dry dock No. 2 is so constructed at the gate that it can not be used for docking
battle ships now building, and it will be exceedingly dangerous to attempt the
king of the *Texas* or armored cruisers in this dock when at the load draft. An
itional dry dock of sufficient size for these vessels is recommended, and the
ortance and necessity of beginning at the earliest possible moment the construc-
ı of such a dock at this navy-yard can not be overestimated. An available and
irable site adjoins dry dock No. 2.
3) The difficulty of berthing ships at this navy-yard, owing to insufficient wharf-
, has been frequently experienced during the past year, and the necessity for
thing ships at a considerable distance from the shops has delayed and increased
cost of the work of repairs. It has occurred several times during the past year
t both dry docks were in use and every berth at the wharves occupied. On two
asions it was necessary to berth a ship at St. Helena, opposite the navy-yard. It
ecommended that the timber basin, no longer required for the original purpose,
uld be cleared out and converted into a fitting basin by building a wall and gate
oss the continuation of Rowan avenue, utilizing that portion of the dock to the
it for spar timber, the eastern portion to be deepened and provided with retaining
lls and a pontoon bridge at the eastern end.
4) The ship-fitters' shop has proved of entirely inadequate capacity for carrying
the work of the department. It is too small for the machines it now contains,
l the equipment of tools is not more than half what it should be. My recom-
ndation of last year in regard to this matter is, therefore, renewed and urged,
ecially in view of the fact that the smithery (building No. 9) has continued to
'elop serious defects, and, in order to obtain necessary space for the tinners, the
shop has been moved to the spar shed (building No. 28).
t is therefore suggested that a new ship-fitters' shop be erected in the vacant lot
acent to the timber basin, which shall have wings and galleries, and be fitted
h traveling cranes, elevators, and all modern appliances, electric plant, new shop
gine and boilers, and additional machine tools, and be connected with the railroad
tem of the yard.
n building No. 42, thus vacated, it is proposed to locate the foundry at the north
l, utilizing the present chimney, enlarging the plant with cupolas and cranes, the
ıth end of this building to be rearranged in two stories for plumbers, copper-
iths, tinsmiths, and pipe fitters.
Building No. 9, the present smithery, to be torn down and a new one erected hav-
; iron framework and corrugated iron sides and roof, and be supplied with a 5,000-
and steam hammer, a new reverberatory furnace, and the jobbing, angle, and beam
ges to be rearranged.
Estimated cost of changes, and installation of tools, rearrangement of shop inte-
rs, and new tools and equipments, $150,000.
5) When ships in dry dock or in the vicinity are undergoing repairs, much time
ost by the workmen in going to and from the shops, which are 2,000 feet distant.
is suggested that a one-story shop, with a shed at each end, be built between the
o dry docks and supplied with a small outfit of machinery and a motive engine of

40 horsepower, for which steam could be obtained from the pump house. The sheds would provide convenient stowage for docking gear and cover for stage plank shores, horses, etc., which deteriorate rapidly from exposure. The estimated cost of machinery for this shop and for erecting and installing the plant is $20,000.

(6) A locomotive 10-ton traveling crane and car would greatly reduce the cost in handling the material of this department; $4,300.

A floating, self-propelling derrick with revolving jib, having a capacity of 80 tons, is very necessary, and could be built and maintained by this department to advantage. The facilities now available for handling heavy weights are inadequate to the work of the yard; $75,000.

Summary.

4. Changes and installation of tools, rearrangement of shop interiors, new tools, and equipments	$150,000
5. Machinery for new one-story shop, to be located between the two dry docks, and for erecting and installing plant in same	20,000
6. A locomotive 10-ton traveling crane and car	4,300
7. A floating, self-propelling derrick, 80 tons capacity	75,000
Total	249,300

Very respectfully,

FRANCIS T. BOWLES,
Naval Constructor, United States Navy.

The COMMANDANT, NAVY-YARD, NORFOLK, VA.

NAVY-YARD, MARE ISLAND, CAL.,
July 8, 1895.

SIR: (1) In accordance with the letter of the Bureau of Construction and Repair, No. 7401-95, dated June 7, 1895, I have the honor to submit the following report concerning improvements of the construction plant of this navy-yard, which will enable work to be performed more economically and promptly.

(2) I respectfully call attention to the necessity for speedily equipping this navy-yard with a complete, modern shipbuilding plant. During the past three months the average number of men employed by this department has been 402; their principal work has been to begin the building of a small tug; to complete the *Monadnock*; to extensively repair the *Hartford*, and to complete the fitting out of the *Olympia*; yet, with this small number of men, the greater part of the plant has been worked to its full capacity and at times work has been delayed and rendered more expensive because of the lack of a sufficient number of the necessary machine tools.

(3) The continually increasing importance of this station demands that this navy-yard should have a shipbuilding plant of sufficient capacity to make extensive repairs on three battle ships simultaneously and quickly; a plant of this capacity is also one that is thoroughly equipped for building and repairing all other types of war ships. At present this navy-yard is not equipped in this manner, and I respectfully urge the importance of providing such a plant without delay.

(4) In accordance with the Bureau's letter, the following report and estimate has been based on the work in hand and that which will probably be required in the near future; the improvements and alterations recommended are immediately necessary, and are in continuation of the plans of my predecessors for gradually building up a suitable plant.

(5) The designation of the various items given below is adhered to on the tracing of plan No. 1770, forwarded herewith.

(6) The power for the various shops of this department is furnished by three sets of engines and boilers, a large new Corliss engine (A), a small old engine at the sawmill (B), and a small old engine at the joiner shop (C); the two small engines have but one boiler each, and when, from any cause, their boilers can not be used, all of the machine tools operated by these engines must be shut down.

(7) This department has no electrical plant; its advantages for construction work are everywhere recognized; its field of usefulness is increasing daily, electrical motors being important aids in reducing the amount of wasteful and slow handwork in ship construction.

(8) The Corliss engine is of ample power for all the work of this department. It is therefore recommended that two dynamos be installed (A), and that an electrical motor replace the present joiner-shop engine (C), and that its boiler be placed at the sawmill (B); that portable electric lights and motors be supplied, and that materials and tools be furnished for repairing this plant and the electrical fittings furnished ships by this department; $15,000.

(9) A new ship-fitters' shop, well equipped with modern machine tools, is absolutely necessary. The present shop (D) is small, contains but few tools, and is inconveniently located; the work of building the small tug now on the ways has been hampered and delayed from this cause. It is proposed to build an open shed (E) having a corrugated roof, with substantial supports for the heavy shafting that will be required. To transport and erect in this new shop the tools on hand, $8,500; to purchase and erect additional tools necessary to enable work to be carried on with economy and dispatch, $18,000; to purchase and erect new shafting and other fittings, $7,200.

(10) A new engine for this shop is not required, as power can be supplied from the Corliss engine.

(11) A suitable galvanizing plant is immediately necessary; the present one was extemporized for necessary work on the *Monadnock*, but it is entirely inadequate for the large amount of galvanizing required for work already authorized. It is proposed to locate the new plant (F) under the bending slab shed; to supply and build furnaces and pots, $2,200.

(12) The smithery (G) is equipped with old tools and fittings which are continually breaking down, and as all are constantly required, much inconvenience and delay is experienced. All the steam hammers require extensive overhauling; there is but one bolt machine and one pair of shears, both of which are practically worn out; there is no reverberatory furnace, and the forges are old and worn out. To overhaul and repair the present plant and build new forges, $5,400; to purchase and erect new tools and reverberatory furnace, $8,200.

(13) The present foundry (I) is too small for the class and amount of work to be done. It is proposed to locate it in the wing of building No. 69, now occupied by ship-fitters' tools (H), to provide an additional cupola, increase the number of brass furnaces and derricks, and build a larger drying room; the present foundry (8) can be opened into the smithery to advantage. To move the foundry and supply the necessary new appliances, $6,800.

(14) The paint shop (K) is located on low ground, where much inconvenience is experienced from floods during the winter rains. To locate it in the proposed new building (V) on the second floor, and equip it with improved appliances for grinding paints and for painting ships in dock, $1,300.

(15) The machine shop (L) is new and fairly well equipped with modern tools, but needs many small tools and appliances to enable work to be done with dispatch; $3,100.

(16) The joiner shop (M) contains but few machine tools and they require extensive repairs from long-continued use; much work is now done by hand, slowly and at increased cost for this reason. To rearrange the shop and repair the present tools, $1,200; to supply and erect new tools, $2,700.

(17) The pattern shop (N) should be enlarged in the rearrangement of the joiner shop and provided with additional tools; $900.

(18) The boat shop (O) has just received a new floor, which facilitates work; a planer and a drill press will enable boats to be built more quickly and economically; $900.

(19) The coppersmith, plumber (P), and tin shops (R) are almost destitute of tools; economy and rapidity will be gained by providing a small outfit; $1,000.

(20) The offices of this department are overcrowded and inconveniently located in the main building (S); it is recommended that the western end of the second floor of building 39 (T) be used for this purpose; the cellulose now stored there can be placed elsewhere, and the remaining portion of the floor can be rearranged at slight expense; $1,700.

(21) The following improvements under the cognizance of Yards and Docks will enable the work of this department to be carried on with increased accuracy and dispatch:

(22) A new ship-fitters' shed (E). This is urgently needed, as has been explained above.

(23) A new dry dock (V). There is now but one dock, and it frequently occurs that it must be occupied for extended periods in repairing or building ships. Should it become necessary to dock another ship while the dock is thus occupied, it can only be done at great additional expense by temporarily floating out the ship then in dock and afterwards redocking her. In time of war, this state of affairs would undoubtedly cause great embarrassment. It is suggested that a wooden dock be built on the site of the old sectional dock basin, of ample size for the largest ships we may build, and divided into two parts by a central caisson to reduce the expense in docking small ships; the outer caisson to be of sufficient breadth and stability to enable the railway running along the water front to be carried across it.

(24) In the present stone dock the lower broad altar necessitates the bilge-block ways being fitted at an angle such that there is much danger in docking the new ships, and it is necessary to suspend pumping and send down a diver to insure the block passing clear of the bilge keels.

(25) Alterations of building 39, to prepare it for use of offices of this departm as explained above.

(26) New brick building of two stories (V), to replace the temporary wooden north of the present dry dock, the lower floor to be fitted as a plumber and tin s and the upper floor as a paint shop and made fireproof.

(27) A brick building (Z) should be erected to provide additional storage cap for lumber. At present a large amount is stored in the open air, and deterior can not be prevented.

(28) The smithery (W) is dark and poorly ventilated. It is recommended skylights be fitted in the roof.

(29) A building slip (X) of sufficient size to accommodate a ship 400 feet lo desirable, so that there may be no delay in case a ship should be ordered built.

(30) Additional wharfage space is greatly needed.

RELATIVE URGENCY OF THE VARIOUS IMPROVEMENTS RECOMMENDED.

Construction and repair.

1. Galvanizing plant.
2. Electric plant.
3. Joiner-shop outfit.
4. Smithery outfit.
5. Tools for new ship-fitters' shed.
6. Foundry outfit.
7. Remove offices.
8. Tools for small shops.

Yards and docks.

1. Alterations of broad altar in dry dock.
2. New ship-fitters' shed.
3. Smithery skylights.
4. Alterations, building 39.
5. New building.
6. Additional wharfage.
7. New dock.
8. Building slip.

Very respectfully,

WM. J. BAXTER,
Naval Constructor, U. S. N

The COMMANDANT, NAVY-YARD, MARE ISLAND, CAL.

I have the honor to be, very respectfully,

PHILIP HICHBORN,
Chief Constructor, U. S. N., Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT

OF THE

CHIEF OF THE BUREAU OF STEAM ENGINEERING.

DEPARTMENT OF THE NAVY,
BUREAU OF STEAM ENGINEERING,
Washington, D. C., September 30, 1895.

SIR: In obedience to your order of July 10, 1895, the following annual report of the operations of this Bureau, together with the estimates for the fiscal year ending June 30, 1897, is respectfully submitted:

APPROPRIATION, STEAM MACHINERY, 1895.

Amount appropriated for fiscal year ending June 30, 1895; act approved July 26, 1894		$675,000.00
Labor in navy-yards and stations in repair of steam machinery, boilers, etc., of naval vessels fitting for sea service, preservation and repair of tools, handling and preservation of materials, stores, etc	$401,675.75	
Purchase of materials, stores, machine tools, freight, and incidental expenses	189,730.82	
Payments for repairs, materials, freight, and incidental expenses for ships on foreign stations	79,488.51	
Total	670,895.08	
Less repayments by transfers in adjustment of appropriations	2,332.31	
Total expenditures		668,562.77
Balance on hand		6,437.23

The larger part of this balance of $6,437.23 is required to pay bills for outstanding contracts and unfilled, approved, open-purchase requisitions obligated under this appropriation.

GENERAL OPERATIONS OF THE BUREAU.

During the past year the Bureau has prepared plans and specifications for torpedo boats Nos. 3, 4, 5, 6, 7, and 8, and for gunboats Nos. 10, 11, 12, 13, 14, and 15, and for tug No. 5. The plans for tug No. 4 have been completed and the machinery is well advanced toward completion. The plans for new machinery for the *Chicago* have been nearly completed and the work of construction has made satisfactory progress. Much work has also been done on the plans and specifications for the machinery of battle ships Nos. 5 and 6. A number of designs have also been made for revenue cutter machinery.

A series of tests to determine the value of liquid fuel for small boats is now in progress at the navy-yard, New York, one of the torpedo boats belonging to the *Maine* being used for that purpose. The trials are to be exhaustive, and it is believed that much valuable information will be derived from them.

A number of tests of coal have been made for the Bureau of Equipment.

Work on the machinery of the *Chicago* has been continued at the navy-yard, New York, and has made fair progress notwithstanding delays in the receipt of material.

WATER-TUBE BOILERS FOR NAVAL PURPOSES.

The necessity for a type of boiler lighter than the Scotch or cylindrical fire-tube pattern has directed increased attention to the merits and possibilities of the water-tube variety. Many patents have been taken out by ingenious and able inventors in the hope of producing a boiler that will contain all the good points demanded by the marine engineer. This concentration of energy, combined with the heavy expenditure involved in boiler construction and experimental research, has been productive of good results, and there are to-day a large number of water-tube boilers which have attained a commercial success on shore.

In making recommendations as to the use of water-tube boilers the Bureau appreciates the necessity of proceeding with caution and yet keeping abreast with progressive builders. No single type has yet made its appearance which can be regarded as an altogether satisfactory substitute for the Scotch pattern, and for this reason the Bureau has not recommended their use in the larger and more important vessels, believing it better, for the present at least, to confine them to torpedo boats, gunboats, and the smaller cruisers.

Conservative as this Bureau may be regarded upon this subject, it has been in advance of every marine engineering establishment in America, for while private firms refused to guarantee a water-tube boiler for naval purposes, the Bureau insisted upon their installation as a part of the power in the coast defense vessel *Monterey*.

THE ATLANTA.

The engine of the *Atlanta* is of an obsolete type and unnecessarily heavy, and it is believed that it would be false economy to continue it in use with new boilers.

The hull of the vessel is an excellent one and well worth new machinery, but it is, according to present practice, entirely too large for a single screw.

The hull can, at comparatively small expense, be altered to allow twin screws to be fitted, and the Government would then possess a cruiser equal to any of her class afloat.

New machinery of 5,400 I. H. P., similar to that in the *Marblehead*, operating twin screws, can, it is believed, be constructed in the navy-yard, New York, for the sum of $300,000, provided material on hand be utilized.

This new machinery will weigh 142 tons less than that now in the ship, thus enabling the coal supply to be increased; it will occupy no more space, and will give an increased speed of 2 knots. It can be installed in the vessel without cutting the protective deck, or necessitating other changes in the hull than those necessary for the supporting platforms and stern tubes.

It is recommended that an appropriation of $150,000 be asked, to be ade immediately available, to commence the construction of new achinery for this vessel in the navy-yard, New York, as above, and at the necessary alterations to the hull be also authorized.

The boilers of the *Boston*, a sister ship, can probably be made to last ıe more cruise, and then the same changes in hull and machinery ıould be made in her.

LIQUID FUEL.

By reason of our ability to secure a large supply of this combustible, series of experiments should be made with petroleum to find out its ılue for torpedo boats and the smaller types of vessels. In order to ake these experiments of any value they would have to be long conıued in order that the various burners might not only be tested for ficiency but also for endurance.

One of the gunboats now building at Newport News would be an lmirable vessel for testing the merits of liquid fuel. The tests should ›t only be progressive but they should be varied. One of the particar questions to be determined would be how much increased power 'er that furnished by natural draft could be secured by burning the ıuid in conjunction with coal. Another important question that might › solved would be the effect of the various fuels on the ends of the ıbes.

It is safe to say that valuable aid would be rendered by those intertted in the development of the oil industry, and an opportunity has ›w occurred when the value of liquid fuel for naval purposes can be ›finitely determined.

NAVY-YARD, PORTSMOUTH, N. H.

The principal work in the steam engineering shops at this yard has ›en the construction of steam-cutter machinery. The hard usage to hich this class of machinery is subjected in service necessitates its ›ing of the very best material and workmanship, conditions which can ıly be assured when manufactured at the Government shops. It has ›en the aim of the Bureau to make this class of machinery, as far as ›ssible, interchangeable in all its parts, and for this reason has conıed its manufacture principally to one yard.

The expenditures were as follows:

vil establishment	$1,652.01
perintendence and care and repair of shop machinery and tools	12,901.41
›ilers and machinery for launches for general use	14,477.41
›bor and material for other departments	312.16
eaking up and conversion of old material	720.47
scellaneous	3,660.62
Total	33,724.08

New machinery for the *Leyden*, constructed in the navy-yard, New ›rk, is now being erected on board the vessel.

NAVY-YARD, BOSTON, MASS.

Small repairs have been made to the machinery of the *Iwana*, *Miannomoh*, *Passaic*, and *Wabash*.

›rk performed for the—	
Bureau of Equipment	$2,020.92
Bureau of Yards and Docks	396.44
Bureau of Construction and Repair	72.28
Total	2,489.64

As the fine stone dry dock is now in order and will be more used than formerly, it is recommended that this yard be again made a repair station, as there is no better time for repairs to be made than when a ship is in dock, and some of the most important ones can be made at no other time.

The immediate vicinity affords everything requisite for the construction and repair of ships and machinery, including an unlimited supply of skilled labor of the highest class.

Some of the largest and finest power tools in the country, including a boiler-making plant with hydraulic flanging and riveting machines, rolls of large size, punches, shears, hydraulic lifts, etc., are in the steam engineering shops at this yard. The tools themselves in all the shops are cared for and preserved from deterioration, but many of the buildings need considerable repairs, and the foundations for some of the heavier tools need to be almost rebuilt.

The amounts expended, other than for the machinery of naval vessels, were as follows:

Office expenses	$210.00
Care and repair of shop machinery and tools	5,739.00
Running, firing, and repairing yard engines and boilers	339.08
Improvement of plant with new tools, etc	120.00
Care and repair of yard steam launches	19.68
Labor and material for other departments	2,492.56
Miscellaneous	192.64
Total	9,112.96

NAVY-YARD, NEW YORK.

With the exception of the forge shop, the buildings of the steam engineering department are well grouped together, and its steam plant is of sufficient capacity to supply anticipated wants for several years.

The expenditures other than for naval vessels were as follows:

Civil establishment	$4,789.60
Office expenses	10,482.90
Care and handling of stores	6,157.66
Care and repair of shop machinery and tools	17,802.58
Running, firing, and repairing yard engines and boilers	1,960.78
Improvement of plant, new tools, etc	7,208.79
Repairs and maintenance of floating derrick	5,139.11
Care and repair of yard steam launches	3,222.35
Boiler and machinery of steam launches for issue	2,867.48
Labor and material for other departments	5,650.62
Experimental and test purposes	4,292.47
Making stores for issue	7,380.64
Breaking up old material	1,393.10
Shipments	3,263.43
Holidays	6,262.67
Miscellaneous	638.37
Total	88,512.55

Work to the following amounts has been done for other Bureaus:

Construction and Repair	$1,560.00
Equipment	818.90
Ordnance	2,332.80
Yards and Docks	287.00
Supplies and Accounts	651.92
Total	5,650.62

Repairs have been made to the machinery of the following vessels, or stores and outfits have been prepared for them: *Alarm*, *Alliance*,

Atlanta, *Castine*, *Chicago*, *Cincinnati*, *Columbia*, *Dolphin*, *Essex*, *Fern*, *Fortune*, *Lancaster*, *Leyden*, *Maine*, *Marblehead*, *Machias*, *Miantonomoh*, *Minneapolis*, *Minnesota*, *Montgomery*, *Narkeeta*, *New York*, *Nina*, *Portsmouth*, *Puritan*, *Raleigh*, *Rocket*, *San Francisco*, *Terror*, *Texas*, *Traffic*, *Vermont*, *Vesuvius*, and *Yorktown*.

NAVY-YARD, LEAGUE ISLAND, PA.

Repairs were made to the machinery of the following vessels, or stores and outfits were prepared for them: *Brooklyn*, *Indiana*, *Iowa*, *Jason*, *Massachusetts*, *Miantonomoh*, *Montauk*, *Richmond*, *Vesuvius*, and steam cutters Nos. 66, 88, 101, and 105.

Necessary care has been taken to preserve the power tools from deterioration.

The expenditures during the year, other than for the machinery of naval vessels, were as follows:

Civil establishment	$1,198.36
Care and repair of shop machinery and tools	10,785.34
Care and repair of steam launches	55.12
Total	12,038.82

The following is repeated from my report of last year:

Too much can not be urged in favor of completing this yard in compliance with the recommendations in the very excellent report of the Board composed of Captains Potter, Farquhar and Whitehead, and Civil Engineers Endicott and Peary, United States Navy, who went over the whole matter exhaustively, and prepared plans which, if carried out, will give the United States a naval station second to none in the world. The advantages of location and surroundings are too well known to need repetition; in short, there is every good reason why this should be the principal naval station for building, repairing, and laying up modern ships, and not one against it.

NAVY-YARD, WASHINGTON, D. C.

Slight repairs were made to the machinery or steam plant of the following vessels: *Cushing*, *Dale*, *Dolphin*, *Fern*, and *Triton*.

The expenses during the year, other than for the machinery of naval vessels, were as follows:

Office expenses	$30.71
Laborer, inspection board for stores	430.00
Care and repair of shop machinery and tools	1,708.03
Care and repair of yard steam launches	567.58
Holidays	127.82
Blue-print apparatus at Bureau	927.20
Judge-Advocate-General's Office	257.54
Museum of Hygiene	286.07
Total	4,334.95

NAVY-YARD, NORFOLK, VA.

This yard, from its location, is well adapted for a building and repair station. The shops, particularly the machine shop, are not well adapted for economical performance of work, owing to the almost entire absence of facilities for handling heavy weights and the impossibility of fitting proper tools in some of the present buildings. Plans should be prepared for a series of buildings, and work upon the erection of a machine shop should be commenced within the fiscal year. The character and arrangement should be of such a nature that they could supply our needs at that point for several decades.

The construction of machinery for tug No. 5, for League Island, has been commenced and is well under way. Boilers for heating the Naval Hospital were constructed, and machinery has been fitted in a number of steam cutters.

The expenditures during the year, except for the machinery of naval vessels, were as follows:

Civil establishment	$1,299.95
Drafting	527.34
Office expenses	4,778.20
Pay of writer for Employment Board	166.26
Care and handling of stores	2,351.50
Superintendence	6,095.96
Care and repair of shop machinery and tools	26,155.61
Running, firing, and repairing yard engines and boilers	3,080.56
Care and repair of yard steam launches	1,316.02
Boilers and machinery of launches for issue	2,748.00
Repairing stores for issue	263.40
Experimental and test purposes	1,277.84
Breaking up old material	641.36
Work for other departments	1,872.98
Holidays	2,709.90
Miscellaneous	41.92
Total	55,326.80

Repairs have been made to the machinery of the following vessels, or stores and outfits have been prepared for them: *Alliance*, *Amphitrite*, *Atlanta*, *Bancroft*, *Columbia*, *Cincinnati*, *Cushing*, *Detroit*, *Dolphin*, *Essex*, *Fortune*, *Franklin*, *Fern*, *Helena*, *Marblehead*, *Montgomery*, *Minneapolis*, monitors at Richmond, *Nashville*, *New York*, *Raleigh*, *Standish*, *Texas*, *Triton*, *Vesuvius*, *Wahneta*, *Wilmington*, and *Wyandotte*.

NAVAL STATION, PORT ROYAL, S. C.

No work was done at this station other than that necessary for the repair of steam-cutter machinery and preservation of tools.

The largest dry dock in the United States has just been completed at this station, and yet there is no engine construction plant in connection with this great work. The machinery plant is a necessary supplement to a dry dock, and the usefulness of the dock is very limited without this auxiliary. The necessity for the immediate construction of steam-machinery buildings must be apparent. In the interval, some buildings should be assigned this Bureau pending the erection of shops, in order that at least limited repairs could be made to the vessels using the dock.

NAVAL STATION, NEWPORT, R. I.

The work at this station has been the care and repair of the machinery of the training ships and steam cutters and the heating and pumping apparatus for water supply in the various buildings on shore.

There is a small machine shop at this station with which the steam launches have been kept in repair. The shop is entirely too small, and only contains a lot of old and nearly worn out tools. A suitable shop with a small equipment of high-grade machine tools should be erected. Vessels concentrating at Newport could then have immediate repairs made to any light parts that might be disabled during the fleet maneuvers.

NAVAL STATION, NEW LONDON, CONN.

Nothing has been done at this station except the care and preservation of material and steam-cutter machinery.

NAVAL STATION SIDNEY, WASH.

No work has been done at this station other than that necessary for the preservation and repair of the machinery of the *Nipsic's* steam cutters.

Though a fine dry dock is nearing completion, there are no facilities for the repair of machinery and boilers. To render the station efficient for repair purposes a number of shops should be erected at once and supplied with an outfit of modern power tools.

NAVAL ACADEMY.

Repairs have been made to the machinery of the vessels and steam cutters attached to the Academy.

I respectfully call attention to the fact that the number of naval cadets in the Engineer Division now being graduated by the Academy is not sufficient to supply the vacancies in the corps caused by deaths, retirements, and resignations. If some means can not be devised whereby the Engineer Division at the Academy can be increased, then recourse must be had to the technical schools and colleges of the country to fill the vacancies, as the number of Engineer officers is now less than allowed by law, and very much less than the needs of the service require.

NAVAL STATION, KEY WEST, FLA.

As this is the principal coaling station for vessels in the Gulf of Mexico and West Indies, the recommendation in my report of last year that a suitable building be provided for a machine shop, and the tools now on hand, together with a few modern ones, including a small steam hammer and furnace, be moved into it is repeated.

The strategic position of this port, and the increased number of steamers trading there, make it a necessity that a suitable engineering plant should be maintained, which could be used by the commercial marine in an emergency. The certainty that urgent repairs could be made to vessels at this station by the Government mechanics would greatly encourage commercial enterprises.

The cost will not be great and the maintenance no more than at present, and the possession of such a shop at this point might be the means of keeping a naval vessel on the station when her services are greatly needed, instead of sending her a long distance for repairs that can not be delayed.

NAVY-YARD, PENSACOLA, FLA.

No work was done at this yard other than that necessary for the repair of steam cutters and the care and preservation of material.

NAVY-YARD, MARE ISLAND, CAL.

As this is the only repair station we have on the Pacific Coast, prudence requires that it should at all times be kept in a condition to meet any demand that may be made on it, either in the way of construction or the repair of the machinery of naval vessels.

To place the yard in such a condition quite a number of power tools are required and should be obtained without delay. The machinery of the *Monadnock*, constructed in this yard, is nearly completed and erected in the vessel and will soon be ready for trial under steam. The

completion of this machinery has been much delayed by the necessity for frequently calling off the men employed on it to make urgent and necessary repairs to ships in commission.

The supply of skilled labor in the immediate vicinity is extremely limited. Mechanics will not come from a distance unless assured of continuous work, and the result is that when unusual demands for repair work on the ships are made on the steam engineering department, men have to be taken from the other work which is in process of construction.

Repairs were made to the machinery of the following vessels, or stores and outfits were prepared for them: *Alert*, *Albatross*, *Bennington*, *Boston*, *Charleston*, *Camanche*, *Hartford*, *Marion*, *Mohican*, *Monadnock*, *Monterey*, *Olympia*, *Philadelphia*, *Ranger*, *Swatara*, *Thetis*, *Unadilla*, and *Yorktown*. Machinery was fitted in a number of steam cutters.

The expenditures, other than for the machinery of naval vessels, were as follows:

Civil establishment	$1,400.00
Drafting	3,502.70
Office expenses	2,112.83
Care and handling of stores	4,499.03
Superintendence	11,158.44
Care and repair of shop machinery and tools	26,860.84
Running, firing, and repairing yard engines and boilers	5,192.41
Care and repair of yard steam launches	1,423.96
Boilers and machinery for new launches	1,954.12
Labor and material for other departments	7,037.35
Experimental and test purposes	160.57
Making stores for issue	8,341.59
Breaking up old material	15.28
Holidays	4,275.77
Miscellaneous	2,900.12
Total	80,835.01

PRESENT CONDITION OF THE MACHINERY OF NAVAL VESSELS.

The following statement shows the condition of the machinery, according to the latest reports:

Adams (wooden cruiser).—Being repaired at navy-yard, Mare Island. Out of commission.

Ajax (single-turret monitor).—In ordinary. Engines in fair condition. New boilers required for active service.

Alarm (torpedo ram).—In ordinary at Brooklyn Navy-Yard. Machinery and boilers in fair condition.

Alert (third-rate iron cruiser).—Main and auxiliary machinery in good condition. Vessel in commission.

Alliance (wooden cruiser).—Machinery and boilers in good condition. In commission.

Amphitrite (double-turret monitor).—In commission. Machinery in good condition.

Atlanta (second-rate steel cruiser).—Out of commission. Engines and boilers poor and worn out.

Baltimore (second-rate steel cruiser).—Main and auxiliary machinery and boilers in fair condition. In commission.

Bancroft (Naval Academy practice vessel).—Machinery and boilers in good condition. In commission.

Bennington (steel gunboat).—Boilers and engines in good condition. In commission.

Boston (second-rate steel cruiser).—Out of commission. Being overhauled at Mare Island Navy-Yard.

Camanche (single-turret monitor).—In ordinary at Mare Island Navy-Yard. Machinery and boilers in good condition and well cared for.

Canonicus (single-turret monitor).—In ordinary. Engines in fair condition, but new boilers would be required for active service.

Castine (steel gunboat).—Engines and boilers in good condition. In commission.

Catskill (single-turret monitor).—In ordinary. Engines in fair condition, but new boilers will be needed for active service.

Charleston (second-rate steel cruiser).—In commission. Machinery in good condition, except L. P. piston.

Chicago (second-rate steel cruiser).—Out of commission. New machinery being built at navy-yard, New York.

Cincinnati (second-rate steel cruiser).—Engines in good condition. Boiler tubes beginning to give out and should be renewed. In commission.

Columbia (first-rate steel cruiser).—Engines and boilers in good condition. In commission.

Concord (steel gunboat).—Machinery and boilers in good condition. In commission.

Cushing (torpedo boat).—Engines in good condition. Boilers need retubing. In commission.

Detroit (third-rate steel cruiser).—Machinery and boilers in good condition. In commission.

Dolphin (dispatch vessel).—Condition of machinery good. Boilers nearly worn out. Vessel in commission.

Emerald (tug).—Machinery and boilers in good condition. Yard ferryboat at the Portsmouth, N. H., Navy-Yard.

Enterprise (wooden cruiser).—Detailed as a school-ship for Massachusetts, and stationed at Boston. Engines and boilers in fair condition for service.

Essex (wooden cruiser).—Machinery and boilers in good condition. Training ship.

Fern (transport).—Engines and boilers are old, much worn, and only fairly efficient. Boilers now on hand that would outlast the life of the hull could be installed if the hull is worth such extensive repairs to the machinery. This vessel is exceedingly useful as a transport between the navy-yards.

Fortune (tug).—Transferred to Bureau of Ordnance for use at Newport, R. I. New engines and boilers to be fitted.

Franklin (wooden frigate).—Engines well cared for, but of obsolete type. Boilers being cut out that new ones, for heating and auxiliary purposes, may be fitted. Employed as receiving ship at Norfolk Navy-Yard. The machinery should be removed and used as old material.

Hartford (wooden cruiser).—In ordinary at Mare Island Navy-Yard. Machinery and boilers removed. Estimates made for new machinery.

Iroquois (wooden cruiser).—Machinery and boilers in poor condition, worn out, and obsolete. In ordinary, Mare Island.

Iwana (tug).—Machinery and boilers in good condition. Yard tug at Boston.

Jason (single-turret monitor).—In ordinary. Main and auxiliary machinery in fair condition. Boilers in need of extensive repairs.

Lancaster (wooden cruiser).—Boilers and engines in fair condition, but of antiquated type. Now in commission.

Lehigh (single-turret monitor).—In ordinary. Engines and boilers in good condition.

Leyden (tug).—New machinery being put in at Portsmouth, N. H., Navy-Yard.

Machias (steel gunboat).—Engines and boilers in good condition. In commission.

Mahopac (single-turret monitor).—In ordinary. Engines require a general overhauling. Boilers unreliable.

Manhattan (single-turret monitor).—In ordinary. Engines in good condition, but the boilers are poor and need to be replaced before going into service.

Maine (armored cruiser).—In commission. Engines and boilers in good condition. Will undergo a series of trials.

Marblehead (third-rate steel cruiser).—Engines and boilers in good condition. In commission.

Marion (wooden cruiser).—In commission. Engines and boilers in good condition.

Miantonomoh (double-turret monitor).—Engines, main and auxiliary, and boilers in fair condition. Out of commission.

Michigan (paddle steamer).—In commission. Engines and boilers in good condition.

Minneapolis (first-rate steel cruiser).—In commission. Engines and boilers in good condition.

Minnesota (wooden frigate).—Not in commission. Will be turned over to Naval Reserves.

Mohican (wooden cruiser).—Out of commission.

Monadnock (double-turret monitor).—Under construction at Mare Island Navy-Yard. Engines and boilers nearing completion.

Monocacy (iron, paddle-wheel).—Engines, boilers, and their details in fair condition. In commission.

Montauk (single-turret monitor).—In ordinary. Machinery, main and auxiliary, and boilers in fair condition.

Monterey (coast-defense vessel).—Engine department in good condition. In commission. Water-tube boilers require retubing.

Montgomery (third-rate steel cruiser).—In commission. Engine and boilers in good condition; boilers have been retubed.

Nahant (single-turret monitor).—In ordinary. Engines in fair condition; boilers poor.

Nantucket (single-turret monitor).—Turned over to naval militia of North Carolina. Machinery in condition for temporary service.

Narkeeta (tug).—Boilers and engines in good condition. Yard tug at the New York Navy-Yard.

Newark (second-rate steel cruiser).—Machinery and boilers in good condition. In commission.

New York (first-rate steel cruiser).—Machinery and boilers in good condition. In commission.

Nina (tug).—Yard tug at New York Navy-Yard. Machinery in good condition.

Nipsic (wooden cruiser).—Engines and boilers worn out and unfit for further service. Guard ship at Port Orchard, Puget Sound.

Olympia (first-class steel protected cruiser).—In commission. Engines and boilers in good condition.

Omaha (wooden cruiser).—In ordinary at Mare Island Navy-Yard. Machinery obsolete; boilers worn out.

Passaic (single-turret monitor).—In ordinary at the Boston Navy-Yard. Machinery and boilers in fair condition.

Pensacola (wooden frigate).—In ordinary at Navy-Yard, Mare Island. Engines and boilers obsolete, but in fair condition.

Petrel (steel gunboat).—Engines in fair condition. Condenser needs retubing. Boilers require constant attention. In commission.

Philadelphia (second-rate steel cruiser).—Ship in commission. In good condition.

Pinta (armed tug).—Machinery and boilers in fair condition. In commission. Obsolete machinery. If the hull is in condition to warrant the expenditure, then new engines should be placed in the vessel, as her form is such that she would make a very serviceable and powerful tug.

Puritan (double-turret monitor).—In ordinary at the Brooklyn Navy-Yard. Engines and boilers in good condition. In readiness for commission.

Raleigh (second-rate steel cruiser).—Engines and boilers in good condition. In commission.

Ranger (third-rate iron cruiser).—Engines and boilers in good condition. Vessel in commission.

Richmond (wooden cruiser).—Machinery well cared for, and boilers in fair condition. Employed as receiving ship at League Island, Pa.

San Francisco (second-rate steel cruiser).—Ship in commission. Engines and boilers in good condition.

Standish (Naval Academy target-practice boat).—New engine and boilers being installed at Navy-Yard, Norfolk, Va.

Swatara (wooden cruiser).—In ordinary at Mare Island Navy-Yard. Engines and boilers in fair condition. New crank shaft required.

Terror (double-turret monitor).—In ordinary at Brooklyn Navy-Yard. Machinery and boilers in good order. In readiness for going into commission.

Texas (second-class battle ship).—In commission. Engines and boilers in good condition. Undergoing trial.

Thetis (special-service vessel).—In commission. Engines and boilers in good condition.

Triton (tug).—Machinery and boilers in good condition. New furnaces have been fitted in boilers. Yard tug at Washington.

Vesuvius (dynamite-gun vessel).—Machinery and boilers in fair condition. Out of commission.

Wabash (wooden frigate).—Machinery obsolete, worn out, and condemned. Used as receiving ship at the Boston Navy-Yard.

Wahneta (tug).—Boilers and machinery in good condition. Yard tug at Norfolk.

Wyandotte (single-turret monitor).—In ordinary. Engines and boilers in fair condition.

Yantic (wooden gunboat).—Machinery and boilers in fair condition, but of obsolete type. In commission.

Yorktown (steel gunboat).—Engines and boilers in good condition. In commission.

CONTRACT TRIAL OF U. S. S. MAINE.

The official trial for horse power took place on the 17th of October, 1894, in Long Island Sound. The *Maine* left her anchorage off New London Light at 12 m, and proceeded out through the Race, and when

off Watch Hill was turned and headed to the westward in order to make as nearly as practicable a straightway run for the four consecutive hours' trial required by the contract.

The trial began at 1.30 p. m. and ended at 5.30. The weather conditions were not very favorable, for throughout the entire run the ship was steaming against a strong head wind and sea, which increased in force to the end of the trial. The ship was remarkably steady, and at the maximum speed of the engines very little vibration was noticeable.

The speed was very accurately obtained for a portion of the trial, while running over the official measured course laid down for the trial of the *Ericsson*. The average speed for this 25-mile course was 15.95 knots, and with a mean allowance of 1.5 knots for the strong head wind and tide, the average speed of the ship was 17.45 knots.

The performance of the machinery throughout the trial was excellent. The main engines ran smoothly and without any heating of the working parts and main bearings. The combined air and circulating pumps worked uniformly and steadily, requiring no particular attention or adjustment at any time.

The performance of the boilers was highly satisfactory. There were no evidences of priming, and at a moderate forced draft they fully demonstrated their capability of furnishing all the steam required by the main engines and all auxiliaries, as required by the contract.

The coal was selected Pocahontas, of good quality. That used during the official trial had been previously weighed and bagged in order that the amount used during the trial might be accurately known.

After the trial the main engines, boilers, surface condensers, and auxiliaries were examined and found in excellent condition.

DATA OF OFFICIAL TRIAL, U. S. S. MAINE.

Draft of water:		
At beginning, forward	feet and inches	18 2
At beginning, aft	do	19 1
At end, forward	do	17 10
At end, aft	do	18 11
Mean, for trial, forward	feet	18
Mean for trial, aft	do	19
Displacement at mean draft on trial	tons	5,500
Area of midship section at 18 feet 6 inches mean draft	square feet	906
Wetted surface	do	21,850
I. H. P. (total) per 100 square feet of wetted surface		42.53
I. H. P. per 100 square feet of wetted surface at 10 knots in ratio of 3.5 power		6.0142
Mean speed	knots	17.45
Slip of screws, mean:		
Starboard	per cent	12.805
Port	do	10.205
Speed^3×area immersed midship section÷I. H. P		518.26
Speed^3×displacement$^{2/3}$÷I. H. P		165.21

Synopsis of steam log.

Revolutions of main engines per minute, mean:	
Starboard	125.96
Port	122.313
Piston speed, feet per minute:	
Starboard	755.76
Port	733.878
Steam:	
At boilers, gauge	144.9
At engines, gauge:	
Starboard	136.27
Port	134.63

Steam—Continued.	
At first receiver, absolute:	
Starboard	67.70
Port	66.33
At second receiver, absolute:	
Starboard	28.84
Port	34.34
Vacuum in condenser, inches of mercury:	
Starboard	23.875
Port	22.839
Opening of throttle ... tenths	10
Steam cut-off in fraction of stroke from beginning:	
H. P.:	
Starboard	.8
Port	.8
I. P.:	
Starboard	.7
Port	.7
L. P.:	
Starboard	.7
Port	.7
Double strokes of combined air and circulating pumps:	
Starboard	51.55
Port	42.444
Temperatures, in degrees Fahrenheit:	
Steam at high-pressure cylinder:	
Starboard	364
Port	363.4
Injection	63
Discharge:	
Starboard	114
Port	99.5
Hot well:	
Starboard	127.3
Port	127.3
Feed:	
Starboard	127.3
Port	127.3
Engine rooms, upper	146
Engine rooms, lower	99
Fire rooms, forward	127
Fire rooms, after	134
Revolutions of blowers per minute, main boilers	450
Air pressure, in inches of water:	
Ash pits	1.074
Furnaces	.92
H. P. cylinder:	
Mean pressure:	
Starboard	54.372
Port	53.656
I. H. P.:	
Starboard	1,216.89
Port	1,165.56
I. P. cylinder:	
Mean pressure:	
Starboard	20.907
Port	19.579
I. H. P.:	
Starboard	1,218.35
Port	1,108.94
L. P. cylinder:	
Mean pressure:	
Starboard	16.236
Port	16.267
I. H. P.:	
Starboard	2,261.75
Port	2,200
Aggregate equivalent mean pressure on L. P. piston:	
Starboard	33.7175
Port	33.0855

I. H. P., collective, of each main engine:	
Starboard	4,696.95
Port	4,474.50
I. H. P., collective, of both main engines	9,171.45
I. H. P. of combined air and circulating pumps:	
Starboard	28.25
Port	24.593
I. H. P., collective, of air and circulating pumps (2)	52.843
I. H. P. of forced draft blowers (4)	38.068
I. H. P. of main feed pumps (2)	15.429
I. H. P. of other auxiliaries	14.856
I. H. P. of all auxiliaries	121.1962
I. H. P. of each main engine, air and circulating pump:	
Starboard	4,725.20
Port	4,499.093
I. H. P. both main engines, air and circulating pumps	9,224.293
I. H. P., total, of all machinery in use	9,292.646
Indicated thrust (I. H. P. of main engines)	57,354.40
Indicated thrust per square inch of surface of thrust bearings	59.31
Cubic feet swept per minute by low-pressure piston per I. H. P. of main engines:	
Starboard	6.73
Port	6.87
Square feet of heating surface per I. H. P	2.0462
Square feet of cooling surface per I. H. P	1.5087
I. H. P. of all machinery in operation per square foot of grate surface	16.1938
I. H. P. per ton of propelling machinery, boilers, and water	14.18
Coal consumption:	
Grate surface in use ... square feet	573.84
Heating surface in use ... do	19,015.36
Kind and quality of coal used	Pocahontas, good quality.
Coal burned per hour:	
Actual weight ... pounds	20,272
Per square foot of grate surface ... do	35.327
Per square foot of heating surface ... do	1.066
Per I. H. P. of all machinery ... do	2.1815
Per I. H. P. of main engines, air and circulating pumps, and feed pumps ... pounds	2.194

CONDITION OF MACHINERY OF NEW VESSELS.

Puritan.—Complete except rearrangement of steam and exhaust piping in fire room; piping for fan blowers, dynamos, winches, capstan, steering engines, etc.; completion of hydraulic plant; installing steam heating system.

Terror.—Machinery completed except piping for dynamo engines (dynamos not yet placed); installing air-expanding machine; cover steam and exhaust piping.

Chicago.—Fair progress has been made with the new machinery for this vessel considering the great delay that has been caused by the non-receipt of material within contract time.

Monadnock.—The main engines, boilers, pumps, etc. have all been erected in the vessel and are nearly ready for a steam trial.

Unadilla.—Some delay has been caused by non-receipt of material. The erection of machinery in the vessel will be commenced almost immediately after she is launched, and it is expected that it will be ready for steam by the 15th of December next.

Armored cruiser No. 3, the Brooklyn.—The four main propelling engines are nearly completed, and two of them have been dismantled after having been erected in the shop, and their bedplates have been placed in the ship. The other two still remain erected in the shop. All outboard valves and pipes are in place and main air and circulating pumps are erected in the ship and their water pipes are connected. The main steam pipes are jointed in place in the vessel and the auxiliary steam and exhaust pipes are being fitted. The propeller struts and stern tubes are being bored. The riveting, calking, and tubing of all boilers is completed, and the fitting of the boiler attachments is now under way.

The following change was made by direction of the Department: Gear for working 8-inch B. L. R. turrets from steam to electricity.

Seagoing battle ship No. 1, the Iowa.—The bedplates, framing, columns, and cylinders are erected in the shop; valve and reversing gear of one engine are partly erected; the rivet holes in shell plates of boilers are partly drilled; several of the head sheets and combustion-chamber sheets have been rolled and flanged, and several of the furnaces have been fitted to the combustion chamber; the main condensers,

main air pumps, all the feed and auxiliary pumps, feed tanks, and distillers are secured in the ship. The speed of the 40-foot steam cutter was changed from 13 knots, as called for by the contract, to 11½ knots, as it was found impossible to drive the boat at the former speed with the machinery to be carried in the space available.

Texas.—Machinery completed, and successful dock trial was made on the 12th and 15th of May, 1894, and the vessel is now in commission. At the request of the Department additional escape ladders were fitted, in order to form an escape from forward fire room.

Maine.—Machinery successfully tried and vessel in commission.

The following changes were made at the request of the contractors: Height of smoke pipes increased 15 feet; the armor bars of smoke pipes were changed so as to run fore and aft instead of athwartships.

By direction of the Department the fire-room ventilators which pass through the pilot house were changed from iron to brass.

Torpedo boat No. 2, The Ericsson.—Machinery completed.

The following changes were made at the request of the contractors: Guard bolts in air pumps from Tobin bronze to steel, and diameter increased; diameter of low-pressure piston rods increased.

Torpedo boat No. 3.—Work on the drawings is well in hand. Work in the pattern shops and machine shops has been commenced.

The following change was suggested by the contractors and approved: Tensile strength of piston rods increased to 65,000 pounds.

By direction of the Department the columns to be secured in the bedplates by keys instead of nuts, and the steam gauges to be graduated to 360 pounds instead of 300.

Torpedo boat No. 4.—Condition of work on machinery same as that of *Torpedo boat No. 3.*

Torpedo boat No. 5.—Condition of work on machinery same as that of *Torpedo boat No. 3.*

Gunboat No. 7, the Nashville.—Propelling machinery is nearly ready for erection in the shop. Auxiliary boilers have been placed on board the vessel. The main boilers have been tubed and will be ready for testing in about two weeks. The air pumps are practically completed. Condensers have been completed and are placed on board. Distillers, feed tanks, and evaporators are now being placed on board.

The following changes suggested by the contractors have been approved: Diameter of dry pipe in boilers increased from 3½ to 4 inches and tinning to be omitted; in size of cylinders of circulating and auxiliary air-pump engines; in diameter of throttle valve from 4 inches to 5 inches; boiler stop valves increased from 3½ to 3½ inches; feed tank to be made of plate steel instead of wrought iron; fire-room ventilators to be made of steel instead of wrought iron.

Gunboat No. 8, the Wilmington.—Main engines are being erected in the shop, and all parts are completed and ready for assembling. The boilers have been placed on board and secured in position, and the main and auxiliary condensers are now being placed in position. The air and circulating pumps are completed and ready to be placed on board. Distillers, feed tanks, and evaporators are being placed in position.

The following changes were suggested by the contractors and approved: Sea-connecting pipes to be made of wrought iron instead of cast steel; diameter of throttle valve from 4¾ to 5½ inches; feed tanks to be made of plate steel instead of wrought iron; grate bars to be made of wrought iron instead of cast iron; additional stay bolts fitted in the steam passages of low-pressure cylinders.

The following changes were made by direction of the Department: Change in method of fitting the sea-injection pipe; additional struts for after propeller shafts.

Gunboat No. 9, the Helena.—Condition of work on machinery same as that of *Wilmington.*

Coast-line battle ship No. 1, the Indiana.—The propelling machinery and boilers have been tried by the contractors at sea, and are now ready for the official trial. A small amount of work still remains to be done on the turret-turning machinery, which can not be completed till work under the cognizance of the Bureaus of Construction and Repair and Ordnance has been completed. A small amount of work still remains to be done on the duplicate pieces, spare parts, etc.

At the request of the contractors the following changes were made: Hard manganese bronze pinions for rack and base of 13-inch turrets to be used instead of cast steel.

By direction of the Department the following changes were made: The contractors to furnish two spare bucket rods, one for each main air pump; fixed smokepipe covers to be omitted and framework fitted for support of canvas cover; pump fitted for waste-water tank; 9-inch valve fitted in each main steam pipe; additional spare manhole plates to be furnished.

Coast-line battle ship No. 2, the Massachusetts.—Condition same as that of *Indiana.*

Coast-line battle ship No. 3, the Oregon.—Propelling machinery and boilers completed. A small amount of work remains to be done on the turret turning machinery, which can not be completed till work under the cognizance of the Bureaus of Construction and Repair and Ordnance has been finished. All the other auxiliary machinery is nearly completed.

Harbor-defense ram, Katahdin.—Machinery completed and ready for official trial.

At the request of the contractors the following changes were made: Braces fitted on low-pressure valve-gear brackets; in pitch of propellers; in valve gear of high-pressure engine.

By direction of the Department the following change was made: Ice machine to be omitted.

Holland submarine torpedo boat.—Work on the drawings is well in hand, but no work has been done in the shops.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Steam Engineering, Navy Department.

Detailed objects of expenditures and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
STEAM MACHINERY (Act Mar. 2, 1895).			
For completion, repairing, and preservation of machinery and boilers of naval vessels, including cost of new boilers, distilling, refrigerating, and auxiliary machinery, preservation of and small repairs to machinery and boilers in vessels in ordinary, receiving and training vessels, repair and care of machinery of yard tugs and launches	$425,000		$425,000
For purchase, handling, and preservation of all material and stores, purchase, fitting, repair, and preservation of machinery and tools in navy-yards and stations, and running yard engines	325,000		240,000
NOTE 1.—The increase of $85,000 is made necessary by the increased amount required for stores and outfits for the new vessels; the great increase required for stores and repairs upon vessels in commission on foreign stations (having increased within two years from an average of $40,000 per annum to about $80,000 per annum), and for the purchase of a new set of iron tubes for the boilers of the *New York*, *Columbia*, and *Minneapolis* to replace the present steel tubes, which are rapidly giving out, and estimated to cost $30,000.			
NOTE 2.—The amount of $30,000 for new iron boiler tubes for the *New York*, *Columbia*, and *Minneapolis* should be made immediately available.			
For incidental expenses for naval vessels, yards, and the Bureau, such as foreign postage, telegrams, advertising, freight, photographing, books, stationery, and instruments	10,000		10,000
		$760,000	675,000
STEAM MACHINERY, SPECIAL (Act Mar. 2, 1895).			
To continue work on new machinery to replace present engines, boilers, etc., of U. S. S. *Chicago*	150,000		200,000
To commence work on new machinery to replace present engines, boilers, etc., of U. S. S. *Atlanta*. (Submitted.)	150,000		
NOTE.—This appropriation of $150,000 for the *Atlanta* should be made immediately available so the work may be at once put in hand.			
To replace present boilers of U. S. S. *Dolphin* with new ones. (Submitted.)	60,000		
NOTE.—The appropriation of $60,000 for the *Dolphin* should be made immediately available.			
To commence new machinery to replace present engines, boilers, etc., of U. S. S. *Hartford*. (Submitted.)	100,000		
To complete new machinery for steam tug for League Island Navy-Yard. (Appropriated.)	8,000		
		468,000	

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditures and explanations.		Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
CONTINGENT (Act Mar. 2, 1895).				
For contingencies, drawing materials, and instruments for the drafting room		$1,000	$1,000	$1,000
SALARIES (Act March 2, 1895).				
Chief clerk		1,800		
One clerk of class 2		1,400		
One clerk of class 1		1,200		
One assistant messenger		720		
Two laborers, $660 each		1,320		
One chief draftsman		2,250		
One assistant draftsman		1,400		
One assistant draftsman		1,000		
			11,090	11,000
CIVIL ESTABLISHMENT (Act Mar. 2. 1895).				
Navy-yard, Portsmouth, N. H.:				
One clerk to Department, per annum	$1,200			
One messenger, per annum	600			
		1,800		
Navy-yard, Brooklyn, N. Y.:				
One clerk to Department, per annum	1,400			
One writer, per annum	1,000			
One messenger, per annum	600			
		3,000		
Navy-yard, League Island, Pa.:				
One clerk to Department, per annum		1,200		
Navy-yard, Norfolk, Va.:				
One clerk to Department, per annum	1,300			
One messenger, per annum	600			
		1,900		
Navy-yard, Pensacola, Fla.:				
One writer, per annum		1,000		
Navy-yard, Mare Island, Cal.:				
One clerk to Department, per annum	1,400			
One writer, per annum	1,000			
One messenger, per annum	600			
		3,000		
			11,900	11,000
IMPROVEMENT OF PLANT.				
Navy-yard, League Island, Pa.:				
For a complete boiler-making plant of modern tools. (Submitted.)		50,000	50,000	
Navy-yard, Norfolk, Va.:				
Extra tools required to put the yard in condition for building and repairing modern marine machinery with economy and dispatch, including improvements in handling machinery and in the boiler-making plant. (Submitted.)		49,205	49,205	

Very respectfully,

GEO. W. MELVILLE,
Engineer-in-Chief, U. S. N., Chief of Bureau.

The SECRETARY OF THE NAVY.

REPORT

OF THE

MASTER-GENERAL OF THE NAVY.

NAVY DEPARTMENT,
BUREAU OF SUPPLIES AND ACCOUNTS,
Washington, D. C., October 1, 1895.

have the honor to submit the report of the Paymaster-General
avy for the fiscal year ending June 30, 1895, with estimates of
ations for the coming fiscal year, and tabulated statements as

ral financial statement.
ment of provisions, clothing and small stores, and contingent.
ment of expenditures of money and material at shore stations, and objects
pplied.
ment showing the value of real estate and chattels and machinery plant
eral navy-yards and stations June 30, 1895.
pilation showing cost of maintaining all naval vessels in commission during
nding June 30, 1895.
ment showing the value of supplies on hand July 1, 1894; the receipts from
and other sources and the expenditures during the year, and the balance on
30, 1895.
ment of payments through the Paymaster-General's Office on contract,
hase, and open-contract vouchers during the fiscal year ending June 30,

ement of the value of naval stores received and expended on board ships
sion for the year ending June 30, 1895.
ment of public sales and reports of deposits during the fiscal year 1895 on
sales of Government property.
lule of proposals received.

lly drawn specifications, wide competition, and rigid inspec-
ve enabled the Department to meet its requirements during the
r with supplies of unusual excellence at surprisingly low prices.
crease in competition since 1893, when the naval-supply fund
blished, has been between 21 and 22 per cent. The increase in
ber of different firms among which contracts have been dis-
has been between 33 and 34 per cent.
mber of entirely distinct firms or business establishments to
ntracts have been awarded in the past year is 335.
val-supply fund of $200,000, which at the time of my last report
being put into successful operation, has been largely utilized,
wisdom of its establishment clearly demonstrated. So steadily
nbursements been made to it that up to the present time nearly
worth of supplies have been purchased under it, the greater
ince the beginning of the last fiscal year. On September 13
s in the Treasury to the credit of the fund, exclusive of all
s, but $3,662.22, which shows how fully the fund is kept invested.
al results are apparent wherever the fund has been applied.
nce, stationery for the naval service was formerly bought under
different appropriations, the quantity purchased being based
itions from the several departments at the yards for the entire
of stationery estimated to be needed during the year. These
ons when compiled and printed in schedules comprised, in 1892,

a book of 100 pages; in 1893, 82 pages; in 1894, 82 pages. The clerical labor involved in compiling requisitions, preparing schedules, verifying bids, and drawing contracts was enormous. The schedules of 1892 contained about 5,000 items, so that the verification of the bids in each case meant besides the extension of 5,000 items by the unit price the addition of a column of figures about 100 feet long.

The stationery when received was delivered at once to the several departments from which the approved requisitions had emanated. These annual requisitions varied very little in amount from year to year, covering always a new and complete outfit. This method involved not only an immense amount of clerical labor, but, what was still worse, the purchase of a larger quantity of stationery than was actually required. To remedy the evil it was directed by you that stationery should be treated as other supplies, that a stock of it should be kept on hand by general storekeepers under the "naval-supply fund," and be drawn only as needed from time to time. The result has been as follows:

The annual schedule this year was a book of 12 pages, instead of 100 pages as in 1892, 82 pages in 1893, and 82 pages in 1894. The cost of printing the schedule was $67.75, instead of $458.50 as in 1892, $368 in 1893, and $350 in 1894.

The stationery purchased for the fiscal year 1893 amounted in value to $22,033.88, for 1894 to $27,908.80, and 1895 to $24,243.05. This latter was purchased under the naval-supply fund, but the estimated requirement was based upon the purchases of preceding years and the requisitions of the several yard departments. Being issued, however, only as actually required in accordance with the rules governing the supply fund, the quantity of unused stationery in store June 30 last was such that the contracts made to meet all probable demands for the fiscal year 1896 aggregated $8,310.88, as against the amounts given above for the preceding years.

In 1892 about 21 per cent of the white lead purchased for delivery at the principal yards was obtained in the open market under emergency requisitions. In 1893 about 76 per cent of the amount purchased was so obtained; in 1894, 36 per cent; while in 1895, under the operation of the naval-supply fund, the amount so purchased was less than 4 per cent. More than 96 per cent of all the white lead delivered at New York and Norfolk in that year (some 265,000 pounds) was obtained by contract after public advertisement, and while, by reason of the rigid specifications adopted by the Department, the white lead delivered was the best that can be manufactured, the average price paid for it was less by 19 per cent than that paid in either of the other years above mentioned.

In 1893, 50 per cent of the lard oil purchased for delivery at New York and Norfolk was obtained in the open market under emergency requisitions. In 1894 the Bureau commenced buying lard oil under the supply fund under specifications adopted by the Department. In that year but 6½ per cent of the lard oil purchased was bought in the open market. Last year the amount so bought was only 3 per cent, 97 per cent of all the lard oil delivered at the points mentioned above having been procured under contract, after public advertisement, and purchased at an average price 20½ per cent less than at any time in either of the preceding years. These articles are cited simply by way of illustration.

Owing to the smallness of the fund it is only possible to maintain at the three principal yards a supply of a portion of the articles that are in constant demand, leaving many that might profitably be purchased under it to be bought under the various bureau appropriations, chiefly in the open market, upon emergency requisitions, thereby entailing a large amount of clerical and other labor incident to frequent requisitions and

inspections, vexatious delays in the procurement of needed supplies, and increased cost due to purchasing in small quantities in the open market. Purchases of this character could be very largely if not wholly obviated by such an increase in the naval-supply fund as would enable the Bureau to cover a wider range of ordinary commercial articles and maintain a supply of them at all stations instead of at three yards, as at present.

I recommend that Congress be asked to increase the fund to $500,000. This would not necessitate an appropriation, but would simply require that the Secretary of the Treasury be authorized and directed to cause "General Account of Advances" to be charged with $300,000, in addition to the $200,000 named in the act of March 3, 1893, establishing the naval-supply fund.

The utility of the fund is now largely restricted by the lack of an appropriation for handling and shipping supplies purchased under it. I recommend that Congress be asked to make necessary provision therefor.

The beneficial effects of the general storekeeper system continue to be strikingly manifest in the steady decrease of that accumulation of general supplies which formerly grew larger year by year, and which, in 1891, amounted in value to $13,347,436.95.

Notwithstanding the fact that since 1890 nearly $25,000,000 worth of supplies have been purchased for the use of the Navy there has been no accumulation of stock, but, on the contrary, a steady decrease, the value of supplies in general stock June 30, 1895, being $8,593,544.05.

The expenditures of supplies for use in the last fiscal year exceeded the receipts by purchase by nearly $500,000, showing that old stock was utilized and purchases obviated to that extent at least.

The several exhibits furnished herewith indicate the comprehensive nature and minute detail of the accounts maintained in this Bureau.

The total expenditures for the naval establishment for the fiscal year 1895 amounted to $29,083,724.16, distributed as follows: Construction of new ships, $9,643,638.85; maintenance of ships in commission, $5,713,438.12; repairs of vessels, $742,222.73; real estate and chattels, $688,931.68; machinery plant, $55,903.80; maintenance of navy-yards and stations, $2,810,515.30; pay of officers and enlisted men on special duty, Light-House Establishment, Coast and Geodetic Survey, Fish Commission vessels, unassigned, and retired list, $2,326,149.19; models and experiments, $35,927.73; purchase of supplies, $4,211,307.95; manufacturing, $1,084,168.19; arming and equipping naval militia, $11,359.22; exchange, honorable discharge gratuities, expenses of officers on special duty abroad, etc., $229,485.55; auditor's certificates and certified claims, $171,950.45; advertising, telegraphing, rent, freight, mileage, wages for legal holidays, and other miscellaneous expenses, $555,852.21; and maintenance of the Marine Corps ashore, $801,873.19.

The total expenditure was about $2,800,000 less than during the preceding year.

Your attention is invited to the act of March 30, 1881, prescribing the method of procuring the annual supply of tobacco for the use of the Navy. Under its provisions the Department is compelled to advertise in February or March of each year, daily for thirty days, in each of 12 cities named in the act, and to accept "the lowest bid for furnishing tobacco equal to the United States Navy standard now in use" (1881). The length of time for which the Department is compelled to advertise and the large number of papers in which the advertisement must appear causes unnecessary expense, the annual cost being about $1,000, while from many of the localities in which the advertisements appear no bids have been received for many years. All other supplies may be advertised twice a week for two weeks. Tobacco being pur-

chased for the use of enlisted men, who pay for it, and who wish to have and are willing to pay for the best that can be procured, it would seem proper that their preference should be considered and that the award should be made, not necessarily to the lowest bidder, but to the one whose tobacco is considered by the board of inspection as best adapted for the use of the Navy. I recommend that Congress be asked to repeal or modify the law accordingly.

Your attention is invited also to the act of Congress approved January 21, 1881, relative to advertising in the District of Columbia. Under this act whenever supplies for the Washington Navy-Yard, small or great in quantity, are advertised for, the advertisement must appear in six different newspapers in the District of Columbia.

I recommend that Congress be asked to exempt supplies for the Washington Navy-Yard from the requirements of this law.

Very respectfully, EDWIN STEWART,
Paymaster-General United States Navy.

Hon. HILARY A. HERBERT,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Supplies and Accounts, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES.			
Chief clerk (increase of $700 submitted; Rev. Stat., p. 27, sec. 167)	$2,500.00		
2 clerks of class 4 (Rev. Stat., p. 70, sec. 416; act July 19, 1892, vol. 27, p. 243, sec. 1, and act Mar. 2, 1895)	3,600.00		
3 clerks of class 3 (same act)	4,800.00		
2 clerks of class 2 (same act)	2,800.00		
2 stenographers, at $1,400 each (same act)	2,800.00		
11 clerks of class 1 (same act)	13,200.00		
4 clerks, at $1,000 each (same act)	4,000.00		
2 copyists, at $900 each (same act)	1,800.00		
1 assistant messenger (same act)	720.00		
2 laborers, at $660 each (same act)	1,320.00		
		$37,540.00	$36,840.00
PROVISIONS NAVY.			
For provisions and commuted rations for the seamen and marines, which commuted rations may be paid to caterers of messes in cases of death or desertion, upon orders of the commanding officer; commuted rations for officers on sea duty and naval cadets, and commuted rations stopped on account of sick in hospital and credited to the naval hospital fund; subsistence of officers and men unavoidably detained or absent from vessels to which attached under orders (during which subsistence rations to be stopped on board ship and no credit for commutation therefor to be given), and fresh water for drinking and cooking purposes (R. S., p. 733, secs. 3709–3747; act May 12, 1879, vol. 21, p. 3, sec. 1, and act Mar. 2, 1895)	1,200,000.00		
Labor in general storehouses and paymasters' offices in navy-yards, including expenses of handling stores purchased under the naval supply fund, and a chemist, at $2,000 per annum (same act)	130,000.00	1,330,000.00	1,175,000.00
NOTE.—Increase in appropriation for provisions made necessary by reason of the increase of 1,000 enlistments authorized by act of March 2, 1895.			
CIVIL ESTABLISHMENT.			
Navy-yard, Portsmouth, N. H. (June 30, 1885, vol. 23, p. 295, sec. 3; Mar. 2, 1895):			
In general storehouses—			
2 bookkeepers, at $1,200 each $2,400.00			
1 assistant bookkeeper 720.00			
1 bill clerk 1,000.00			
1 assistant clerk 720.00			
1 shipping and receiving clerk 1,000.00			
Total	5,840.00		

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
CIVIL ESTABLISHMENT—continued.				
Navy-yard, Boston, Mass.:				
In general storehouses—				
1 bookkeeper	$1,017.25			
1 shipping clerk	1,000.00			
1 receiving clerk	1,000.00			
In navy pay office—				
1 writer	1,017.25			
Total		$4,034.50		
Navy-yard, Brooklyn, N. Y.:				
1 writer to boards of inspection	900.00			
In general storehouses—				
3 bookkeepers, at $1,200 each	3,600.00			
1 assistant bookkeeper	1,000.00			
1 assistant bookkeeper	720.00			
3 receiving clerks, at $4 per diem each	3,756.00			
1 assistant receiving clerk	1,099.00			
3 shipping clerks, at $1,000 each	3,000.00			
1 bill clerk	1,000.00			
1 assistant bill clerk	720.00			
2 leading men, at $2.50 per diem each	1,565.00			
5 pressmen, at $2.76 per diem each	4,319.40			
1 superintendent, coffee mills, at $3 per diem	939.00			
1 box maker, at $3 per diem	939.00			
1 engine tender, at $3.26 per diem	1,020.38			
1 coffee roaster, at $2.50 per diem	782.50			
1 fireman, at $2 per diem	626.00			
1 messenger, at $2.25 per diem	704.25			
In yard pay office:				
1 writer	1,017.25			
1 messenger, at $2.25 per diem	704.25			
Total		28,412.03		
Navy-yard, League Island, Pa.:				
In general storehouses—				
1 bookkeeper	1,200.00			
1 assistant bookkeeper	720.00			
Total		1,920.00		
Navy-yard, Washington, D. C.:				
In general storehouses—				
1 bookkeeper	1,200.00			
1 clerk	1,200.00			
1 receiving clerk	1,000.00			
1 bill clerk	1,000.00			
1 shipping clerk	1,000.00			
In yard pay office:				
1 writer	1,017.25			
Total		6,417.25		
Naval Academy, Annapolis, Md.:				
1 bookkeeper	1,017.25			
1 receiving and shipping clerk	1,000.00			
Total		2,017.25		
Naval station, Newport, R. I.:				
In general storehouses—				
1 clerk		1,200.00		
Navy-yard, Mare Island, Cal.:				
In general storehouses—				
2 bookkeepers, at $1,200 each	2,400.00			
2 assistant bookkeepers, at $720 each	1,440.00			
1 receiving clerk	1,000.00			
1 shipping clerk	1,000.00			
1 bill clerk	1,000.00			
1 assistant clerk	1,000.00			
In yard pay office—				
1 writer	1,017.25			
Total		8,857.25		

Estimates of appropriations required for the service of the fiscal year, etc.—Continued.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1895.
CIVIL ESTABLISHMENT—continued.				
Navy-yard, Norfolk, Va.:				
In general storehouses—				
2 bookkeepers, at $1,200 each	$2,400.00			
2 assistant bookkeepers, at $1,017.25 each	2,034.50			
1 bill clerk	1,000.00			
1 assistant bill clerk	720.00			
1 receiving clerk	942.00			
1 assistant receiving clerk	720.00			
In yard pay office—				
1 writer	1,017.25			
Total		$8,833.75		
Total			$67,532.03	$67,561.09
CONTINGENT.				
For freight and express charges, candles, fuel, books and blanks, stationery, advertising, furniture for general storehouses and pay offices in navy-yards, expenses of naval clothing factory and machinery for same, postage, telegrams, telephones, tolls, ferriages, yeoman's stores, iron safes, newspapers, ice, transportation of stores purchased under the naval supply fund, and other incidental expenses (act Mar. 2, 1895)		50,000.00	50,000.00	45,000.00

STATEMENT A.

GENERAL NAVAL ACCOUNT FOR THE FISCAL YEAR ENDING JUNE 30, 1895.

Appropriations.

DEBITS.

Balances July 1, 1894			$7,619,329.43
Appropriations for fiscal year 1895:			
Act of July 26, 1894		$25,286,361.72	
Act of March 3, 1893		300,000.00	
Act of August 18, 1894		45,000.00	
Deficiency act of August 23, 1894:			
Appropriations of 1893	$93,139.07		
Appropriations of 1894	100,278.04		
		193,417.11	
Deficiency act of March 2, 1895, appropriations of 1894		148,195.85	
Act of March 2, 1895		4,512,252.25	
			30,485,226.93
Overdrawn appropriations covered by warrant			11,478.32
Interest on Navy pension fund			420,000.00
Covered into the credit of the following funds:			
Clothing and small stores fund		$315,733.70	
Naval-hospital fund		111,243.42	
Pay of the Navy, deposit fund		163,194.96	
Ordnance material, proceeds of sales		24,133.69	
Pay, miscellaneous, 1894		482.42	
Pay, miscellaneous, 1895		1,357.57	
			616,145.76
Transfers between appropriations by warrant			80,465.00
Transfers between appropriations by Auditor's adjustments			1,192,576.69
Total			40,425,222.13

CREDITS.

Charged to account of appropriations, Navy Department requisitions	$24,361,390.33
Charged to account of appropriations, Auditor's adjustments	6,120,154.96
Navy pension fund	420,000.00
Charged to overdrawn appropriations, Navy Department requisitions	10,770.78
Charged to overdrawn appropriations, Auditor's adjustments	707.54
Surplus fund, 1895	513,535.60
Balances on hand June 30, 1895, to next account	8,998,652.92
Total	40,425,222.13

Balances June 30, 1895.

Annual appropriations:		
1895	$2,095,395.45	
1894	128,850.91	
1893	183,427.76	
1889	146.83	
1888	138.73	
		2,407,959.68
Increase of the Navy:		
Construction and machinery	969,711.45	
Traveling cranes	14,350.82	
Equipment	12,362.06	
Armor and armament	968,012.69	
Rapid-twist guns and reinforce cartridges	13,907.96	
Armor and gun steel	100,009.66	
Gun plant, navy-yard, Washington, D. C	44,880.02	
Nickel	201,395.80	
Submarine torpedo boat	198,665.32	
		2,523,295.78
Funds as follows:		
Pay of the Navy, deposit fund	219,949.25	
Navy pension fund	420,000.00	
Naval hospital fund	339,505.60	
Clothing and small stores fund	209,597.53	
Naval-supply fund	59,995.90	
Payment of Japanese award	29,992.35	
Prize money	452,977.25	
Bounty, destruction of enemies' vessels, act of July 7, 1884	54,220.80	
		1,786,238.68
Miscellaneous appropriations:		
Mileage, Navy, Graham decision	1,690.58	
Payments on account of purchase of steamers *De Soto* and *Bienville*	41,701.95	
Certified claims	2,442.57	
Repairs to U. S. S. *Hartford*	98,785.12	
Repairs to U. S. S. *Constitution*	7,989.36	
Steam machinery, "special"	142,598.35	
		295,207.93
Continued appropriations for public works		1,985,960.85
Total balance as above		8,998,662.92

Requisitions drawn by the Navy Department during the fiscal year 1895.

Charged to current appropriations	$24,361,390.33	
Charged to overdrawn appropriations	10,770.78	
General account of advances	5,322,540.84	
		$29,694,701.95
Deduct adjustments		1,367,950.97
Total amount advanced		28,326,750.98

ANALYSIS OF ADVANCES.

By the Navy Department:		
Bills of exchange drawn by pay officers of ships	$112,018.72	
Direct payments	27,774.90	
		139,793.62

Through the Paymaster-General:		
To the fiscal agents, London, England	$1,350,000.00	
To disbursing officers to pay vouchers	13,570,347.26	
To disbursing officers to pay labor rolls	5,086,351.23	
To disbursing officers, pay of the Navy	3,556,642.91	
To pay officers of ships in commission	3,814,800.00	
To pay officers of the Marine Corps	808,815.96	
		$28,186,957.36
Total advances as above		28,326,750.98

Statement of receipts and payments for fiscal year ending June 30, 1895.

RECEIPTS.

Balance of account July 1, 1895		$8,140,077.50
Appropriations for fiscal year 1895 (see Appropriations)		30,485,226.93
Overdrawn appropriation for fiscal year 1895		11,478.32
Interest on Navy pension fund (3 per cent on $14,000,000)		420,000.00
Cash from sales of supplies:		
Bureau of Equipment	$4,752.60	
Bureau of Ordnance	801.04	
Bureau of Construction and Repair	687.26	
Bureau of Supplies and Accounts	24,024.03	
Fuel, Marine Corps	1,059.41	
Armor plate to War Department	12,647.04	
		43,971.38
Cash from sales of condemned stores:		
At navy-yard, Portsmouth, N. H	220.00	
At navy-yard, Boston, Mass	1,808.93	
At navy-yard, New York, N.Y	12,015.86	
At navy-yard, League Island, Pa	4,462.49	
At navy-yard, Washington, D.C	16,932.47	
At navy-yard, Norfolk, Va	12,466.13	
At navy-yard, Pensacola, Fla	82.50	
At Naval Academy, Annapolis, Md	132.44	
Condemned tugs	688.00	
On board ships in commission	658.61	
		49,467.43
Undrawn pensions from pensioners at Naval Home		8,257.90
Collected from defaulting contractors		1,093.71
Refunded on account of Auditor's settlements		4,451.83
Refunded, miscellaneous		5,868.44
Premiums received on sales of bills of exchange		3,240.62
Cash received from rents:		
Wharf at Naval Home	$300.00	
Wharf at navy-yard, New York, N.Y	250.00	
Wharf at Yokohama, Japan	121.31	
		671.31
Gain on appreciation of silver		217.67
Interest paid by fiscal agents, London, England		327.08
Damages to vessels, collected		283.18
Cash from purchase of discharge by seamen		2,703.15
Cash from sales of deceased men's effects		1,053.74
Cash from sales of deserters' effects		1,388.76
Total		39,179,778.95

PAYMENTS.

Secretary of the Interior to pay Navy pensions	$339,535.00
Payments to the suplus fund, 1895	513,535.00
To the United States Treasury as miscellaneous receipts	23,193.93
Expenses of sales of condemned stores	4,687.31
Adjusted accounts	430.83
For account of the Naval Establishment	28,623,109.22
Balance June 30, 1895, to next account	9,675,287.06
Total	39,179,778.95

Analysis of payments for account of the Naval Establishment.

Approved money vouchers:		
Bureau of Yards and Docks	$819,317.98	
Bureau of Equipment	553,483.56	
Bureau of Navigation	175,752.58	
Bureau of Ordnance	5,098,572.79	
Bureau of Construction and Repair	404,967.50	
Bureau of Steam Engineering	289,822.00	
Bureau of Supplies and Accounts	587,694.77	
Bureau of Medicine and Surgery	151,707.93	
Secretary's Office	5,330,259.41	
		$13,411,578.52
Labor rolls at navy-yards and naval stations:		
Bureau of Yards and Docks	531,297.88	
Bureau of Equipment	358,540.58	
Bureau of Navigation	165,027.99	
Bureau of Ordnance	998,231.57	
Bureau of Construction and Repair	1,986,751.71	
Bureau of Steam Engineering	719,117.18	
Bureau of Medicine and Surgery	37,570.32	
Bureau of Supplies and Accounts	214,866.59	
		5,011,403.82
Pay rolls of navy-yards and naval stations:		
Pay of the Navy	2,710,022.19	
Provisions (commuted rations)	29,997.50	
		2,740,019.69
Payments by navy pay agents		968,390.72
Payments on account of the Marine Corps:		
By the quartermaster	$280,010.77	
By the paymaster	507,497.25	
By the assistant quartermaster	15,200.00	
		802,708.02
Public bills, ships in commission		762,777.55
Payments on rolls of ships in commission:		
Officers, crew, and marines, for pay	$3,982,863.78	
Officers, crew, and marines, for commuted rations	720,312.25	
Miscellaneous	19,049.70	
		4,722,225.73
Direct payments:		
By the Navy Department	27,772.30	
By the Auditor for the Navy Department	60,619.01	
By the fiscal agents, London, England	16,123.57	
By the naval attachés abroad	22,564.32	
		127,079.20
Miscellaneous payments		76,925.97
Total		28,623,109.22

Statement of assets and liabilities.

ASSETS.

Appropriations, balance undrawn		$8,998,662.92
General account of advances		124,436.97
Advances to disbursing officers, in transit:		
To Navy pay agents	$285.00	
To pay officers of ships	45,000,00	
To fiscal agents, London, England	100,000.00	
To naval attachés	1,265.29	
		146,550.29
Balances in hand, as follows:		
Navy pay agents, for vouchers	34,090.88	
Navy pay agents, general account of advances	95,000.00	
Navy pay agents, pay of the Navy, etc	76,185.39	
Pay officers of navy-yards and naval stations for labor rolls	96,804.20	
Pay officers of ships in commission	623,285.70	
Quartermaster of the Marine Corps	15.75	
Paymaster of the Marine Corps	10,709.46	
Naval attachés abroad	2,575.54	
		938,666.92

Payments to seamen for deposits, not adjusted by Auditor	$20,463
Transfers between pay officers, in transit	42,880
Deposits in United States Treasury not adjusted by Auditor	28,887
Total	10,300,549

LIABILITIES.

Pay of the Navy, deposit fund	$219,949
Credited by disbursing officers, advanced in July, 1895	2,200
Bills of exchange not paid	236,811
Balance, fiscal agents, London, overdrawn	111,911
Vouchers not reported as paid	7,024
Deposits by seamen on interest, not adjusted by Auditor	47,360
Balance as per account, receipts and payments	9,675,287
Total	10,300,549

Statement of receipts and expenditures for fiscal year ending June 30, 1895.

DEBITS.

Balance due June 30, 1894, and included in payments for 1895:		
Rolls of ships in commission	$670,090.43	
Rolls of navy-yards and stations	17,386.19	
		$687,476
Overpayments on rolls of ships in commission, June 30, 1895, to be accounted for in 1896		10,570
Overpayments transferred, in transit		4,117
Overpayments, deserters' accounts, transferred to Auditor for the Navy Department		1,434
Expenditures for fiscal year 1895		29,083,724
Total		29,787,323

CREDITS.

Overpayments July 1, 1894, brought forward:		
Rolls of ships in commission	$15,194.53	
Rolls of navy-yards and stations	85.07	
		$15,279
Credited to funds:		
Clothing and small-stores fund	300,490.09	
Naval-hospital fund	47,052.92	
		347,543
Forfeited by seamen:		
Through courts-martial, "pay"	20,438.30	
Through desertion, "pay"	25,973.38	
Through unauthorized absence, "pay"	10,408.55	
Through unauthorized absence, "commuted rations"	2,028.20	
		58,848
Advances to officers checked, not reported paid		3,476
Allotments checked, not reported paid		5,941
Clothing overdrawn by marines		3,002
Retained pay, marines		661
Checked by order of Auditor for Navy Department		5,311
Apprehension of deserters, checked on rolls		1,800
Purchase of discharge, checked on rolls		874
Miscellaneous, checked on rolls		542
Due and unpaid on rolls:		
Transferred accounts in transit	$54,441.48	
Deceased men's accounts transferred to Auditor for Navy Department	8,383.86	
		62,825
Due and unpaid on rolls June 30, 1895, carried forward:		
Rolls of ships in commission	628,751.10	
Rolls of navy-yards and stations	29,356.42	
		658,107
Balance, payments on account of the Naval Establishment		28,623,109
Total		29,787,323

Analysis of expenditures for the fiscal year ending June 30, 1895.

Approved money vouchers:		
Title A. Cost and valuation of ships	$8,219,091.32	
Title B. Equipage of ships	11,581.71	
Title D. Repairs of vessels	3,444.01	
Title E. Real estate and chattels	552,414.26	
Title F. Machinery plant	1,100.00	
Title G. General maintenance	272,795.18	
Title N. Models and experiments	19,746.97	
Title V. Advertising	9,299.36	
Title V. Transportation of men	34,296.75	
Title W. Deterioration and waste	5,519.99	
Title X. Supplies in store	4,154,259.24	
Title Y. Supplies afloat	9,204.44	
Title Z. Conversion account	4,348.62	
		$13,297,101.85
Labor rolls at navy-yards and stations:		
Navy-yard, Portsmouth, N. H	110,653.59	
Navy-yard, Boston, Mass	232,654.29	
Naval station, Newport, R. I	100,766.03	
Naval station, New London, Conn	8,325.57	
Navy-yard, New York, N. Y	1,530,587.45	
Navy-yard, League Island, Pa	186,674.55	
Naval Academy, Annapolis, Md	150,451.99	
Naval Home, Philadelphia, Pa	20,979.72	
Navy-yard, Washington, D. C	936,594.64	
Naval proving ground, Indian Head, Md	40,658.21	
Navy-yard, Norfolk, Va	821,432.23	
Naval station, Port Royal, S. C	12,786.46	
Naval station, Key West, Fla	8,366.08	
Navy-yard, Pensacola, Fla	29,466.94	
Navy-yard, Mare Island, Cal	802,361.35	
Naval station, Puget Sound, Wash	18,644.72	
		5,011,403.82
Title G. Maintenance navy-yards and stations:		
Pay of officers on duty, etc.—		
Navy-yard, Portsmouth, N. H	59,366.80	
Navy-yard, Boston, Mass	73,806.67	
Naval station, Newport, R. I	61,277.52	
Naval station, New London, Conn	15,921.54	
Navy-yard, New York, N. Y	189,479.71	
Navy-yard, League Island, Pa	59,031.93	
Naval Home, Philadelphia, Pa	25,729.03	
Navy pay office, Baltimore, Md	6,200.00	
Naval Academy, Annapolis, Md	239,301.21	
Navy-yard, Washington, D. C	108,359.06	
Naval proving ground, Indian Head, Md	10,021.90	
Navy-yard, Norfolk, Va	91,962.51	
Naval station, Port Royal, S. C	21,150.05	
Naval station, Key West, Fla	10,328.03	
Navy-yard, Pensacola, Fla	16,627.49	
Navy-yard, Mare Island, Cal	81,583.33	
Naval station, Puget Sound, Wash	12,521.09	
Naval Observatory, Washington, D. C	29,677.51	
		1,112,345.38
Title G. Naval hospital, Yokohama, Japan	16,416.12	
Coaling station, Honolulu	2,673.65	
Coaling station, Pichilinque, Mexico	240.00	
		19,329.77
Title C. Cost of commission of ships:		
Pay of officers and seamen	4,188,385.37	
Pay of marines	198,351.30	
Commuted rations, officers and seamen	576,768.90	
Commuted rations, marines	57,329.10	
Miscellaneous expenses	98,456.59	
		5,119,291.26
Repairs, ships in commission, paid on ships' bills:		
Bureau of Equipment	1,103.75	
Bureau of Ordnance	75,29	
Bureau of Construction and Repair	28,456.58	
Bureau of Steam Engineering	38,291,24	
		67,926.86

Supplies purchased by ships in commission, paid on ships' bills:		
Bureau of Equipment	$359,176.80	
Bureau of Ordnance	5,938.36	
Bureau of Construction and Repair	33,395.45	
Bureau of Steam Engineering	57,616.70	
Bureau of Supplies and Accounts	138,019.55	
		$594,146.86
Title H. Pay of officers on the retired list	922,808.60	
Title H. Pay of officers on leave or waiting orders	172,321.98	
Title H. Pay of recruits awaiting draft and discharge	202,483.61	
Title H. Commuted rations, recruits awaiting draft and discharge	62,253.30	
Title H. Pay and expenses of prisoners	7,954.22	
		1,367,821.71
Title K. Coast and Geodetic Survey:		
Pay of officers and seamen	164,058.79	
Commuted rations, officers and seamen	29,713.20	
Miscellaneous expenses	564.47	
		194,336.46
Title L. Light-House Establishment, pay of officers		67,981.62
Title M. Fish Commission:		
Pay of officers and seamen	$61,353.86	
Commuted rations, officers and seamen	11,308.20	
Miscellaneous expenses	52.12	
		72,714.18
Title O. Naval militia:		
Money vouchers	9,465.39	
Pay of seamen	1,893.83	
		11,359.22
Title V. Freight:		
Money vouchers	43,185.59	
Adjusted by Auditor for Navy Department	70,865.73	
		114,051.32
Title V. Bureau expenses	15,450.42	
Title V. Bureau expenses, Ourdan & Kolb letter-engraving machine	20,000.00	
		35,450.42
Title V. Miscellaneous expenses		19,516.24
Title V. Mileage and travel of officers		152,342.78
Title I. Pay of officers traveling under orders		29,105.43
Title I. Special duty, pay of officers: Navy Department, chiefs of bureau and officers on duty		182,645.74
Special duty:		
Hydrographic	$43,902.96	
Nautical Almanac	10,500.00	
Naval dispensary and museum of hygiene	16,612.47	
Under instruction at War College	14,246.55	
Under instruction abroad	12,408.62	
		97,670.60
Special duty, boards, etc.:		
Inspection and survey	35,877.18	
Examining and retiring	43,796.11	
Medical examining	13,185.95	
Permanent improvement, New York	3,500.00	
		96,359.24
Special duty, inspection:		
Inspectors of steel	45,833.72	
Inspectors of ordnance	14,077.24	
Cramp & Sons, Philadelphia, Pa	34,556.43	
Bath Iron Works	2,800.00	
Quintard Iron Works	3,200.00	
Union Iron Works	14,078.36	
Continental Iron Works	1,423.57	
Dubuque Iron Works	1,291.51	
Newport News Shipbuilding Company	10,779.72	
Miscellaneous inspection duty	7,678.37	
		135,718.92

Title I. Special duty, pay of officers—Continued.		
Special duty, miscellaneous:		
Medical attendance	$8,939.17	
Marine rendezvous	5,038.92	
Furlough	881.50	
Superintendence State, War, and Navy building	5,850.96	
Orders of Department	6,775.71	
		$27,486.26
Special duty, detailed:		
Smithsonian Institution	4,000.00	
Instructors at colleges	8,002.47	
School-ship *St. Marys*	10,328.54	
School-ship *Saratoga*	11,398.57	
School-ship *Enterprise*	12,283.01	
Supervisors of New York Harbor	5,000.00	
Atlanta Exposition	2,235.62	
Miscellaneous	1,060.82	
		54,309.03
Payments for account of the Marine Corps:		
Title G. Marine barracks—		
Portsmouth, N. H	32,958.80	
Boston, Mass	53,240.04	
Newport, R. I	21,309.53	
New York, N. Y	96,887.02	
League Island, Pa	56,107.88	
Naval Academy	32,291.66	
Naval Home	7,072.85	
Washington, D. C	159,835.27	
Norfolk, Va	34,874.58	
Port Royal, S. C	9,016.01	
Mare Island, Cal	83,748.12	
Sitka, Alaska	17,195.41	
Clothing factory, Philadelphia, material and labor	95,130.10	
Advertising	2,506.40	
Freight and transportation	6,250.38	
Miscellaneous expenses	5,352.04	
Mileage of officers	6,278.18	
Pay of officers and men, retired	76,223.52	
Pay of officers on special duty	5,595.40	
		801,873.19
Sundry naval expenses:		
Outfits for naval apprentices	15,645.14	
Honorable discharge gratuities to seamen	105,020.00	
Apprehension of deserters	1,799.13	
Interest paid on deposits by seamen	6,590.38	
Discount on bills of exchange	50,014.56	
Loss on depreciation of silver	4,503.58	
Damages to vessels and wharves	4,043.53	
Admiralty charts	4,582.97	
Expenses fiscal agents, London, England	572.99	
Interest paid on overdrafts, fiscal agents, London	553.15	
Commission paid to fiscal agents, London	7,215.61	
Expenses dispatch agent, London	1,533.76	
Expenses Board of Visitors, Naval Academy	1,246.64	
Expenses students abroad	2,893.17	
Pay and expenses naval attachés abroad	16,924.75	
Miscellaneous	6,346.19	
		229,485.55
Miscellaneous payments and certified claims:		
Auditor's certificates—		
Pay of the Navy, 1892	153.57	
Pay of the Navy, 1893	9,472.06	
Pay of the Navy, 1894	15,440.29	
Pay of the Navy, 1895	15,388.68	
Heirs of deceased officers and seamen	18,273.69	
Certified claims	49,396.36	
Prize money	1,592.16	
Bounty, destruction of enemies' vessels, act of July 7, 1884	513.46	

Miscellaneous payments and certified claims—Cont'd.		
Indemnity for lost clothing	$2,468.03	
Indemnity for lost property	9,994.07	
Extra pay to officers and men who served in the war with Mexico	485.00	
Mileage, Navy, Graham decision	37,028.66	
Destruction of clothing and bedding for sanitary reasons	1,407.47	
Enlistment bounties to seamen	5,477.22	
Sales of deserters' effects, credited on rolls	1,294.04	
Sale of deceased men's effects, credited on rolls	1,096.26	
Refunded by seamen, credited on rolls	726.60	
Miscellaneous credits on rolls	1,742.83	
		$171,950.4[illegible]
Total expenditures, 1895		29,083,724.1[illegible]

STATEMENT B.

Statement of receipts and expenditures of provisions, fiscal year, 1895.

RECEIPTS.

Balances July 1, 1894:		
On hand at navy-yards and stations	$123,615.42	
On board ships in commission	62,927.99	
Provisions in transit	4,599.11	
		$191,142.52
Receipts at navy-yards and stations:		
Purchases	101,873.14	
Gain on issues	18.34	
Gain by revaluation by surveys	515.53	
From coffee mill (roasted and ground coffee)	12,558.25	
From United States Marine Corps	53.64	
		115,018.90
Receipts on board ships:		
Purchases	135,158.56	
Gain on issues	10,308.35	
Gain on average prices	.27	
		145,467.18
Total		451,628.60

EXPENDITURES.

Expenditures at navy-yards and stations:		
For use (expense account)	$200.86	
Water to navy-yard tugs (cooking and drinking)	92.10	
Condemned by surveys to loss account	5,752.12	
Loss on issues	14.13	
Condemned by surveys to be sold at auction	3,600.24	
To coffee mill (green coffee)	12,558.25	
To United States Marine Corps	210.15	
		$22,427.85
Expenditures on board ships:		
Issues to crew	222,450.89	
Issues to marines	30,356.26	
Water for cooking and drinking purposes	2,094.65	
To other departments	272.33	
Sales to messes for cash	16,447.31	
Condemned by surveys to loss account	1,086.12	
Loss on issues	5,361.88	
Issues to supernumeraries not entitled to pay	339.23	
Disallowances in pay officers' accounts	63.87	
		278,472.5[illegible]
Balances, July 1, 1895:		
On hand at navy-yards and stations	79,574.48	
On board ships in commission	61,050.30	
Provisions in transit	10,103.43	
		150,728.2[illegible]
Total		451,628.[illegible]

Provisions in transit June 30, 1895.

EXPENDITURES.

rd quarter, 1895:		
From Rufus Parks, general storekeeper, navy-yard, New York—		
To paymaster Henry A. Dent, U. S. S. *Castine*		$3.41
arth quarter, 1895:		
From Rufus Parks, general storekeeper, navy-yard, New York—		
To Paymaster L. Hunt, U. S. S. *Dolphin*		.28
To Paymaster J. B. Redfield U. S. S. *Atlanta*		1.08
To Paymaster George H. Read, U. S. S. *Columbia*		4.42
To Paymaster George W. Beaman, U. S. S. *New York*		4.17
To Paymaster J. J. Cheatham, U. S. S. *Alliance*		1.21
To W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal.		4,040.25
From W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal—		
To Paymaster William J. Littell, U. S. S. *Alert*	$781.53	
Do	725.07	
		1,506.60
To Paymaster Walter L. Wilson, U. S. S. *Machias*	884.12	
Do	10.00	
		894.12
To Paymaster J. R. Stanton, U. S. S. *Monterey*	1,541.36	
Do	9.92	
		1,551.28
To Paymaster C. S. Williams, U. S. S. *Detroit*	2,076.69	
Do	19.92	
		2,096,61
Total		10,103.43

Statement of receipts and expenditures of contingent stores, fiscal year 1895.

RECEIPTS.

ances July 1, 1894:		
On hand at navy-yards and stations	$12,369.57	
On board ships in commission	14,282.38	
Contingent stores in transit	668.88	
		$27,320.83
eipts at navy-yards and stations:		
Purchases	18,119.96	
Gain on issues	29.16	
From other departments	73.98	
Gain by revaluation by surveys	1,492.33	
From naval-supply fund	1,152.84	
		20,868.27
eipts on board ships:		
Purchases	672.03	
Gain on issues	11.57	
From other departments	19.57	
From naval-supply fund	242.22	
		945.39
Total		49,134.49

EXPENDITURES.

penditures at navy-yards and stations:		
For use (expense account)	$13,439.25	
To other departments	462.84	
Condemned by surveys to loss account	1,757.70	
Loss on issues	5.00	
Condemned by surveys to be sold at auction	1,798.50	
		$17,463.29
penditures on board ships:		
To ships' use	5,282.61	
To other departments	429.57	
Sales for cash	57.54	
Loss on issues	1.62	
		5,771.34

Balances July 1, 1895:		
On hand at navy-yards and stations	$10,578.55	
On board ships in commission	15,129.73	
Contingent stores in transit	191.58	
		$25,899.8
Total		49,134.4

Contingent stores in transit June 30, 1895.

EXPENDITURES.

Fourth quarter, 1895:		
From Rufus Parks, general storekeeper, navy-yard, New York— To Paymaster Stephen Rand, United States Fish Commission steamer *Fish Hawk*		$12.(
From W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal.—		
To Wm. J. Littell, U. S. S. *Alert*	$33.00	
Do	30.00	
		63.(
To Walter L. Wilson, U. S. S. *Machias*		20.(
To L. C. Kerr, U. S. S. *Concord*		47.!
To Frances J. Semmes, U. S. S. *Ranger*		47.!
Total		191.!

Clothing and small stores account.

RECEIPTS.

Clothing and small-stores fund July 1, 1894		$1,119,178.(
Receipts by warrant:		
No. 5, August, 1894	$83,819.76	
No. 9, November, 1894	74,349.28	
No. 12, February, 1895	65,262.30	
No. 16, May, 1895	91,867.68	
No. 17, June, 1895	434.68	
		315,733.7
Accounts receivable subject to settlement by the Auditor for the Navy Department		311,977.8
Clothing and small stores purchased:		
Purchased at navy-yards and stations	$228,979.22	
Purchased by pay officers on ships	2,170.12	
Purchased from United States Marine Corps	1,170.20	
Pay roll at naval clothing factory (manufacturing)	37,038.20	
	269,357.74	
Auditor's certificate No. 189 in favor of Wm. Morgan (deceased), late seaman United States Navy	62.25	
		269,419.9
Gains:		
Profit and loss	22.40	
Gain on average prices	2,386.53	
Gain by 10 per cent addition to invoice prices	18,325.52	
		20,734.4
Total		2,037,044.6

EXPENDITURES.

Payments made for purchases in 1895		$280,937.48	
Less due for purchases in 1894		18,930.85	
			$262,006.6
Due for purchases made in 1895		7,658.26	
Less due from Auditor for the Navy Department (fourth quarter, 1894)	$3.15		
Less due from United States Marine Corps	241.75		
		244.90	
			7,413.3
			269,419.9

:ounts settled by the Auditor for the Navy Department:		
Third quarter, 1894	$82, 828. 54	
Fourth quarter, 1894	73, 633. 49	
First quarter, 1895	66, 625. 80	
Second quarter, 1895	92, 211. 19	
Third quarter, 1895	83. 41	
Fourth quarter, 1895	351, 27	
		$315, 733. 70
›thing and small stores expended:		
Issued to officers and crew	273, 953. 54	
Issued to marines	8, 210. 80	
Clothing outfits to apprentices as bounty	15, 879. 28	
Sold to other departments	6, 057. 66	
Sold for cash	6, 840. 98	
Sold to United States Marine Corps	240. 88	
		311, 183. 14
ıses:		
Expense account (for use)	123. 13	
Issued to supernumeraries	3. 03	
Loss by sales at public auction	10, 772. 21	
Loss on issues	1, 296. 10	
Loss by revaluation by surveys	160. 14	
		12, 354. 61
thing and small-stores fund July 1, 1895		1, 128, 353. 16
Total		2, 037, 044. 60

tement of the clothing and small-stores fund for the fiscal year ending June 30, 1895.

ASSETS.

ıh accounts:		
Balance in United States Treasury to credit of fund	$209, 597. 53	
Balance in hand of paymaster at navy-yard, New York	192. 70	
		$209, 790. 23
·ck accounts:		
On hand at navy-yards and stations	396, 452. 46	
On hand at naval clothing factory	9, 839. 07	
On hand condemned to be sold	23, 522. 37	
On board ships in commission	320, 770. 64	
Stores in transit	17, 818. 68	
		768, 403. 22
:ounts receivable:		
For issues and sales awaiting adjustment by the Auditor for the Navy Department—		
Second quarter, 1895	44. 52	
Third quarter, 1895	83, 330. 77	
Fourth quarter, 1895	73, 403. 07	
		156, 778. 36
Due for difference in purchase by pay officer of U. S. S. *Monocacy*, fourth quarter, 1894	3. 15	
Due from United States Marine Corps for purchase in November, 1894 (transfer February, 1895)	241. 75	
		244. 90
Due for disallowances in pay officers' accounts		794. 71
Total assets		1, 136, 011. 42

LIABILITIES.

ɜ for unpaid bills for stores delivered	$6, 880. 09	
ɜ for reservations unpaid	591. 84	
ɜ for unpaid ship's bills	174. 69	
		$7, 646. 62
ɜ United States Marine Corps (third quarter, 1894)		11. 64
Total liabilities		7, 658. 26
thing and small-stores fund, July 1, 1895		1, 128, 353. 16
		1, 136, 011. 42

Statement of purchases and payments.

PURCHASES.

Due for clothing and small stores July 1, 1894:		
At navy-yards and stations	$18,357.03	
On board ships	573.82	
		$18,930.85
Due for purchases in fiscal year 1895:		
At navy-yards and stations	228,979.22	
On board ships	2,170.12	
	231,149.34	
From United States Marine Corps (settled by adjustment)	1,170.20	
Auditor's certificate in favor of William Morgan, deceased, late seaman United States Navy	62.25	
		232,381.79
Due from auditor for difference in purchases on ships fourth quarter, 1894		3.15
Due from United States Marine Corps		241.75
Total purchases		251,557.54

PAYMENTS.

Payments made for clothing and small stores during fiscal year 1895:		
At navy-yards and stations	$239,864.32	
On board ships	2,572.40	
	242,436.72	
To United States Marine Corps (settled by adjustment)	1,400.31	
To William Morgan, deceased, late seaman United States Navy, on Auditor's certificate No. 189	62.25	
		$243,899.28
Balance due on clothing and small stores:		
At navy-yards and stations	7,471.93	
On board ships	174.69	
	7,646.62	
Due United States Marine Corps (transfer third quarter, 1894)	11.64	
		7,658.26
Total payments		251,557.54

Clothing and small stores in transit June 30, 1895.

EXPENDITURES.

Fourth quarter, 1895:		
From L. C. Kerr, general storekeeper, navy-yard, Mare Island, Cal.—		
To Paymaster J. R. Stanton, U. S. S. *Monterey*		$3,364.30
From W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal.—		
To Paymaster W. J. Littell, U. S. S. *Alert*	$306.54	
Do	384.74	
		691.28
To Paymaster W. L. Wilson, U. S. S. *Machias*		1,577.95
To Paymaster J. R. Stanton, U. S. S. *Monterey*		138.51
To Paymaster C. S. Williams, U. S. S. *Detroit*		3,577.09
To Paymaster L. C. Kerr, U. S. S. *Concord*		268.00
To Paymaster P. V. Mohun, U. S. S. *Petrel*		515.63
From Rufus Parks, general storekeeper, navy-yard, New York—		
To Paymaster Stephen Rand, United States Fish Commission steamer *Fish Hawk*		938.91
To Paymaster W. T. Thomson, U. S. S. *Philadelphia*		177.86
To W. W. Woodhull, general storekeeper, navy-yard, Mare Island, Cal		9,688.44

Fourth quarter, 1895—Continued.	
From Paymaster John Q. Lovell, United States Coast Survey vessels—	
To Rufus Parks, general storekeeper, navy-yard, New York	$92.46
Total expenditures	21,030.43

RECEIPTS.

Third quarter, 1895:	
By Paymaster C. S. Williams, U. S. S. *Detroit*	$2.10
From Paymaster E. B. Webster, U. S. S. *Yorktown*.	
Fourth quarter, 1895:	
By Paymaster J. R. Stanton, U. S. S. *Monterey*	3,209.65
From L. C. Kerr, general storekeeper, navy-yard, Mare Island, Cal.	
Total receipts	3,211.75
Balance in transit	17,818.68
	21,030.43

STATEMENT C.

Statement of expenditures of money and material at shore stations, and objects to which applied during the fiscal year ending June 30, 1895.

TITLE A.—COST OF CONSTRUCTION OF SHIPS.

Vessels.	Money vouchers.	Labor.	Material.	Total.
Newark	$6,050.00			$6,050.00
Yorktown	7,575.00			7,575.00
Baltimore	7,625.00			7,625.00
Vesuvius	39,700.00			39,700.00
Maine	99,775.44	$240,890.65	$162,085.23	502,751.32
Texas	142,105.74	215,625.77	269,796.60	627,528.11
Puritan	15,751.51	164,133.05	121,691.24	301,575.80
Monadnock	4,288.46	181,715.81	39,130.18	225,134.45
Amphitrite	5,472.12	78,321.15	92,048.42	175,841.69
Terror	602.68	117,178.66	29,138.78	146,920.12
Philadelphia	19,100.00			19,100.00
San Francisco		62.40		62.40
Concord	3,250.00	35.86		3,285.86
Bennington	5,350.00	42.38		5,392.38
Miantonomoh		87.00		87.00
Monterey		65.37		65.37
New York		4,506.98		4,506.98
Olympia	213,919.88	21,673.74	2,858.33	238,451.95
Cincinnati	279.45	49,147.80	22,484.76	71,912.01
Raleigh	702.60	28,496.65	8,125.05	37,324.30
Montgomery	56,590.01	8,920.40	2,495.31	68,005.72
Detroit	56,576.51	22,267.10	6,321.64	85,165.25
Marblehead	92,571.32	17,597.03	4,839.90	115,008.25
Bancroft	45,000.00	410.70		45,410.70
Ericsson	75.00	1,763.03	32.44	1,870.47
Machias	46,350.50	36,590.92	6,479.41	89,420.83
Castine	59,252.13	52,920.98	8,915.13	121,088.24
Katahdin	61,514.83	8,132.65	28,009.72	97,657.20
Torpedo boat No. 3	506.36	3,455.52		3,961.88
Torpedo boat No. 4	506.37	3,468.17		3,974.54
Torpedo boat No. 5	506.37	3,490.17		3,996.54
Torpedo boat No. 6	285.04	878.34		1,163.38
Torpedo boat No. 7	285.04	872.34		1,157.38
Torpedo boat No. 8	285.04	897.34		1,182.38
Steam tug No. 4		27,137.43	6,404.84	33,542.27
Steam tug No. 5		195.55		195.55
Indiana	873,743.67	15,455.91	5.04	889,204.62
Massachusetts	1,223,442.71	10,715.25	4.34	1,234,162.30
Oregon	1,569,793.40	16,131.29	23.22	1,585,947.91
Columbia	159,183.66	12,175.70	810.96	172,170.32
Minneapolis	1,193,833.55	32,939.15	3,856.94	1,230,629.64
Brooklyn	1,055,469.17	6,698.64	14.51	1,062,182.32
Iowa	847,691.70	10,759.89	.71	858,452.30
Gunboat No. 7	101,220.92	8,330.75		109,551.67
Gunboat No. 8	101,430.07	7,329.56		108,759.63
Gunboat No. 9	101,430.07	6,802.51		108,232.58
Gunboat No. 10		529.54		529.54
Gunboat No. 11		535.04		535.04
Gunboat No. 12		646.84		646.84
Gunboat No. 13		652.72		652.72
Gunboat No. 14		457.34		457.34
Gunboat No. 15		456.40		456.40
Battle ship No. 5		1,473.28		1,473.28
Battle ship No. 6		1,476.78		1,476.78
Total	8,219,091.32	1,424,547.53	815,572.70	10,459,211.55

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE B.—EQUIPAGE OF SHIPS.

Vessels.	Money vouchers.	Labor.	Material	Total.
Maine		$6,825.95	$152.74	$6,978.69
Texas		4,672.38	46.55	4,718.93
Puritan		1,579.16		1,579.16
Monadnock		887.52	6.72	894.24
Amphitrite		8,169.32	179.60	8,348.92
Terror		568.08	5.04	573.12
San Francisco		2,967.76		2,967.76
Monterey		7.76		7.76
New York		348.48		348.48
Olympia	$7,225.00	1,426.16		8,651.16
Cincinnati		2,685.59	82.64	2,768.23
Raleigh		1,410.35	114.54	1,524.89
Montgomery		1,210.71	16.88	1,227.59
Detroit		1,214.49	47.77	1,262.26
Marblehead		767.31		767.31
Castine		1,247.64	84.00	1,331.64
Columbia	2,158.72	191.70		2,350.42
Minneapolis	2,197.99	82.20		2,280.19
Total	11,581.71	36,262.56	736.48	48,580.75

TITLE D.—REPAIRS OF SHIPS.

Charleston		$8,925.42	$1,728.17	$10,653.59
Yorktown		15,081.53	4,841.66	19,923.19
Baltimore		24.76		24.76
Vesuvius		5,128.17	3,059.78	8,187.95
Maine		14.16		14.16
Cushing		1,858.16	277.16	2,135.32
Amphitrite		33.60	9.28	42.88
Philadelphia		20,061.22	9,308.95	29,370.17
San Francisco		76,432.89	29,181.08	105,613.97
Bennington		20,408.04	5,666.25	26,074.29
Maintonomoh		2,175.03	1,294.23	3,469.26
Monterey	$305.00	7,236.02	1,424.43	8,965.45
New York	17.74	64,245.33	32,269.10	96,532.17
Cincinnati		5,677.01	2,535.17	8,212.18
Montgomery	99.75	2,290.54	1,537.22	3,927.51
Detroit	361.00	5,379.59	2,858.13	8,598.72
Marblehead	337.67	4,521.97	2,411.51	7,271.15
Bancroft	176.00	651.39	467.93	1,295.32
Machias		702.44	964.88	1,667.32
Castine	25.00	95.55	1,625.66	1,746.21
Columbia		9,538.44	5,592.33	15,130.77
Chicago	66.10	47,345.88	8,514.58	55,926.56
Atlanta		15,074.36	2,374.91	17,449.27
Boston		80,486.91	16,654.84	97,141.75
Dolphin		3,791.98	1,323.55	5,115.53
Lancaster		37,218.18	8,171.28	45,389.46
Richmond	104.00	6,448.38	1,585.62	8,138.00
Swatara		211.69		211.69
Marion		33,025.90	7,006.31	40,032.21
Mohican		8,909.19	2,016.18	10,925.37
Adams		3,392.66	1,524.48	4,917.14
Alliance	28.75	52,069.92	11,347.40	63,446.07
Essex		2,811.65	485.04	3,296.69
Nipsic	376.00			376.00
Thetis		7,587.42	2,037.64	9,625.06
Alert		5,218.73	2,553.93	7,772.66
Ranger		1,790.86	240.62	2,031.48
Alarm			16.86	16.86
Wyandotte		2,709.59	415.70	3,125.29
Camanche		129.30		129.30
Jason		16.16		16.16
Montauk		13.12		13.12
Nahant		174.08		174.08
Passaic		654.40	39.26	693.66
Fern		8,990.60	2,475.16	11,465.76
Fortune		8,803.22	1,499.81	10,303.03
Leyden		28,496.85	6,884.16	35,381.01
Rocket	1,125.00	136.33	12.90	1,274.23
Nina		4,747.63	1,545.10	6,292.73
Standish	19.00	8,469.00	3,474.19	11,962.19
Triton		506.02	595.13	1,101.15
Vermont		287.75	249.86	537.61
Independence		122.99	67.95	190.94
Constitution		10.64		10.64
Monongahela		26.84	119.41	146.25

ment of expenditures of money and material at shore stations, etc.—Continued.

TITLE D.—REPAIRS OF SHIPS—Continued.

Vessels.	Money vouchers.	Labor.	Material.	Total.
ation	$203.50		$82.45	$285.95
uth		$78.89	4.07	82.96
		14.60	10.10	24.70
		810.39	197.66	1,008.05
ta		149.81	368.21	518.02
	184.50	2,835.46	1,136.27	4,156.23
s		3,579.44	701.78	4,281.22
		34,736.59	17,213.22	51,949.81
s	5.00			5.00
		1,076.42		1,076.42
s		2,607.24	493.74	3,100.98
		2,146.57	165.05	2,311.62
olis		1,326.60	945.77	2,272.37
		1,325.93	390.96	1,716.89
	10.00	4.43	61.87	76.30
tal	3,444.01	670,851.86	212,055.94	886,351.81

TITLE E.—REAL ESTATE AND CHATTELS.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
rd, Portsmouth, N. H	$5,294.32	$741.02		$6,035.34
rd, Boston, Mass	23,037.50	111.44	$2,640.66	25,789.00
ation, Newport, R. I	1,700.00	7,190.94	22,524.70	31,415.64
ation, New London, Conn			78.00	78.00
rd, League Island, Pa	40,589.27	14,472.04	3,258.55	58,319.86
rd, Brooklyn, N. Y	76,610.26	4,351.24		80,961.50
cademy, Annapolis, Md	8,374.93	10,486.81	16,942.33	35,804.07
rd, Washington, D. C	1,522.00	25,621.41	27,064.53	54,207.94
bservatory, Washington, D. C	27,269.25			27,269.25
roving Ground	790.00	2,698.94	3,140.87	6,629.81
rd, Norfolk, Va	2,128.31	33,014.46	40,364.97	75,507.74
ation, Port Royal, S. C	48,691.45	7,435.48	12,484.39	68,611.32
ation, Key West, Fla	794.69			794.69
rd, Pensacola, Fla			800.00	800.00
rd, Mare Island, Cal	13,069.46	16,118.07	13,108.65	42,296.18
ation, Puget Sound, Wash	256,964.89	14,275.57		271,240.46
r, Algiers, La	45,577.93			45,577.93
tal	552,414.26	136,517.42	142,407.65	831,339.33

TITLE F.—MACHINERY PLANT.

rd, Portsmouth, N. H.:				
au of Construction and Repair		$1,731.04	$207.75	$1,938.79
au of Steam Engineering		60.22		60.22
rd, Boston, Mass.:				
au of Yards and Docks			146.25	146.25
au of Equipment			613.00	613.00
au of Construction and Repair		4,482.42	698.37	5,180.79
au of Steam Engineering			120.00	120.00
ation, Newport, R. I.:				
au of Navigation			411.32	411.32
au of Ordnance			6,361.13	6,361.13
au of Steam Engineering			1,437.16	1,437.16
rd, New York:				
au of Ordnance			68.75	68.75
au of Construction and Repair		2,277.92	5,346.78	7,624.70
au of Steam Engineering		3,089.42	3,131.60	6,221.02
rd, League Island, Pa.:				
au of Construction and Repair		3,180.48	7,725.65	10,906.13
au of Steam Engineering		81.76	5.33	87.09
rd, Washington, D. C.:				
au of Ordnance	$1,100.00	36,805.98	46,741.21	84,647.19
roving ground:				
au of Ordnance		174.36		174.36
rd, Mare Island, Cal.:				
au of Construction and Repair		3,920.20	3,448.74	7,368.94
tal	1,100.00	55,803.80	76,463.04	133,366.84

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE G.—GENERAL MAINTENANCE.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Navy-yard, Portsmouth, N. H	$230.69	$59,190.88	$15,797.90	$75,219.47
Navy-yard, Boston, Mass	4,363.12	113,502.72	37,782.81	155,648.65
Naval magazine, Chelsea, Mass	1,192.85			1,192.85
Niter depot, Malden, Mass	137.37			137.37
Naval station, Newport, R. I	4,194.55	77,525.29	42,180.71	123,900.55
Naval magazine, Fort Mifflin, Pa	4,723.50			4,723.50
Naval station, New London, Conn	842.25	8,325.57	1,824.78	10,992.60
Navy-yard, New York, N. Y	12,328.96	264,116.07	65,452.15	341,897.18
Navy-yard, League Island, Pa	6,419.57	112,313.63	26,776.69	145,509.89
Naval Home, Philadelphia, Pa	57,208.38	17,736.12		74,944.50
Navy-yard, Washington, D. C	4,201.12	158,509.86	86,120.55	248,921.53
Naval Academy, Annapolis, Md	1,670.55	139,965.18	73,501.68	215,137.41
Naval magazine, Bellevue, Md	56.00	757.09		813.09
Naval Observatory, Washington, D. C	121.79			121.79
Navy-yard, Norfolk, Va	5,902.51	146,073.61	59,459.40	211,435.52
Naval station, Port Royal, S. C	727.10	5,350.98	6,630.67	12,708.75
Naval station, Key West, Fla	4,613.29	8,366.08	1,563.47	14,542.84
Navy-yard, Pensacola, Fla	3,846.09	28,790.62	5,904.77	38,541.48
Navy-yard, Mare Island, Cal	11,736.44	199,945.82	70,229.74	281,912.00
Naval station, Puget Sound, Wash	641.21	4,281.66	2,529.72	7,452.59
Sacketts Harbor, New York	365.00			365.00
Navy pay office, Baltimore, Md	138.83			138.83
Naval hospital, Widows Island, Maine	395.35	830.00		1,225.35
Naval hospital, Portsmouth, N. H	3,795.47	2,454.48		6,249.95
Naval hospital, Chelsea, Mass	13,548.85	3,511.06		17,059.91
Naval hospital, New York, N. Y	23,838.17	6,422.67		30,260.84
Naval Laboratory, New York, N. Y	33,440.05	4,125.00		37,565.05
Naval hospital, Philadelphia, Pa	18,698.44	3,243.60		21,942.04
Naval hospital, Washington, D. C	6,568.19	2,026.66		9,194.85
Naval hospital, Norfolk, Va	15,499.74	3,806.25		19,305.99
Naval hospital, Pensacola, Fla	861.98	660.00		1,521.98
Naval hospital, Mare Island, Cal	12,784.63	4,945.60		17,730.23
Naval dispensary, Washington, D. C	2,017.26			2,017.26
Museum of Hygiene, Washington, D. C	6,022.87	1,320.00		7,342.87
Erie, Pa	548.00			548.00
Hydrographic Office, Washington, D. C	8,615.15			8,615.15
Naval magazine, Craney Island, Virginia	95.60			95.60
Naval magazine, Dover, N. J	370.00	888.41		1,258.41
Naval proving ground, Indian Head, Maryland	34.26	26,370.06	10,590.80	36,995.12
Total	272,795.18	1,406,044.97	506,345.84	2,185,185.99

TITLE V.—MISCELLANEOUS.

Advertising	$9,299.36			$9,299.36
Freight	43,185.59			43,185.59
Incidental expenses of bureaus, including Ourdan & Kolb letter-engraving machine (Bureau of Navigation)	34,507.36			34,507.36
Transportation of enlisted men	34,296.75			34,296.75
Mileage claims	10,276.06			10,276.06
Printing, stationery, etc., for inspectors, medals, telegraphing, court-martial and investigation expenses, notary's fees, custom-house charges, etc	17,042.27			17,042.27
Miscellaneous labor, etc., at navy-yards		$185,375.35	$14,021.97	199,397.32
Total	148,607.39	185,375.35	14,021.97	348,004.71

TITLE Z.—CONVERSION ACCOUNT.

Bureau of Yards and Docks:				
Navy-yard, Washington		$193.16	$286.76	$479.92
Navy-yard, Norfolk			90.59	90.59
Bureau of Equipment:				
Navy-yard, Portsmouth		216.52	622.24	838.76
Navy-yard, Boston		99,237.65	71,226.01	170,463.66
Navy-yard, New York		42,603.56	29,755.11	72,358.67
Navy-yard, League Island			230.88	230.88
Navy-yard, Washington		4,139.27	3,943.83	8,083.10
Navy-yard, Norfolk		11,685.90	20,332.86	32,018.76
Navy-yard, Mare Island		29,242.09	107,964.61	137,206.70
Bureau of Ordnance:				
Navy-yard, Boston		2.72	162.00	164.72
Torpedo station, Newport		14,965.64	7,091.93	22,057.57
Navy-yard, New York		20,968.79	217,478.63	238,447.42
Navy-yard, League Island		1,739.54	149,382.30	151,121.84

Statement of expenditures of money and material at shore stations, etc.—Continued.

TITLE Z.—CONVERSION ACCOUNT—Continued.

Navy-yards, etc.	Money vouchers.	Labor.	Material.	Total.
Bureau of Ordnance—Continued.				
Navy-yard, Washington	.....	$547,793.59	$710,964.69	$1,258,758.28
Navy-yard, Norfolk	.....	2,424.64	68,195.49	70,620.13
Navy-yard, Mare Island	.....	9,704.54	179,321.29	189,025.83
Bureau of Construction and Repair:				
Navy-yard, Portsmouth	.....	806.46	869.19	1,675.65
Navy-yard, Boston	.....	106.04	387.25	495.29
Navy-yard, New York	.....	85,701.37	95,803.19	181,504.56
Navy-yard, League Island	.....	3,016.36	8,789.93	11,806.29
Navy-yard, Washington	.....	9,308.35	1,886.06	11,194.41
Navy-yard, Norfolk	.....	60,562.02	32,002.32	92,564.34
Navy-yard, Mare Island	.....	21,712.86	51,989.92	73,702.78
Bureau of Steam Engineering:				
Navy-yard, Portsmouth	.....	14,928.70	2,637.21	17,565.91
Navy-yard, New York	.....	30,986.47	42,426.80	73,413.27
Navy-yard, League Island	.....	19.24	174.10	193.34
Navy-yard, Norfolk	.....	22,196.75	18,667.25	40,864.00
Navy-yard, Mare Island	.....	8,517.14	11,021.87	19,539.01
Bureau of Supplies and Accounts:				
Navy-yard, New York	$4,348.62	37,038.20	73,041.47	114,428.29
Total	4,348.62	1,079,819.57	1,906,745.78	2,990,913.97

RECAPITULATION.

Titles.	Money vouchers.	Labor.	Material.	Total.
A.—Cost of construction of ships	$8,219,091.32	$1,424,547.53	$815,572.70	$10,459,211.55
B.—Equipage of ships	11,581.71	36,262.56	736.48	48,580.75
D.—Repairs of ships	3,444.01	670,851.86	212,055.94	886,351.81
E.—Real estate and chattels	552,414.26	136,517.42	142,407.65	831,339.33
F.—Machinery plant	1,100.00	55,803.80	76,463.04	133,366.84
G.—General maintenance	272,795.18	1,406,044.97	506,345.84	2,185,185.99
N.—Models and experiments	19,746.97	16,180.76	107,263.21	143,190.94
O.—Naval militia, arming and equipping	9,465.39	.....	34,614.37	44,079.76
V.—Miscellaneous	148,607.39	185,375.35	14,021.97	348,004.71
W.—Deterioration and waste (repairing instruments)	5,519.99	.....	.....	5,519.99
Z.—Conversion account (for manufacture)	4,348.62	1,079,819.57	1,906,745.78	2,990,913.97
Y.—Coal shipped to North Atlantic squadron	9,204.44	.....	.....	9,204.44
Expended for specific objects, as above	9,257,319.28	5,011,403.82	3,816,226.98	18,084,950.08
X.—Supplies in store	4,154,259.24	.....	.....	4,154,259.24
Total	13,411,578.52	5,011,403.82	3,816,226.98	22,239,209.32

STATEMENT D.

Statement showing the value of real estate and chattels and machinery plant at the several navy-yards and stations, June 30, 1895.

Navy-yards and stations.	Real estate and chattels.	Machinery plant.
Navy-yard, Portsmouth, N. H	$2,843,682.43	$306,175.35
Navy-yard, Boston, Mass	10,890,054.72	1,064,058.58
Naval station, Newport, R. I	630,668.58	89,797.20
Naval station, New London, Conn	128,618.57	6,136.16
Navy-yard, New York, N. Y	13,489,322.51	875,053.15
Navy-yard, League Island, Pa	3,014,211.54	218,097.79
Naval Academy, Annapolis, Md	706,890.68	20,538.32
Navy-yard, Washington, D. C	4,521,950.05	2,151,593.05
Naval Observatory, Washington, D. C	642,805.37	.....
Naval proving ground	101,191.28	7,511.56
Navy-yard, Norfolk, Va	5,824,511.47	574,509.18
Naval station, Port Royal, S. C	509,505.20	892.50
Naval station, Key West, Fla	300,092.74	8,291.55
Navy-yard, Pensacola, Fla	1,886,022.49	45,459.00
Navy-yard, Mare Island, Cal	4,957,673.65	359,922.07
Naval station, Puget Sound, Wash	547,940.30	.....
Naval magazine, Dover, N. J	72,974.28	.....
Total	51,068,115.86	5,728,035.46

STATEMENT E.

Compilation showing cost of maintaining all naval vessels in commission during year ending June 30, 1895, excepting medical stores.

Vessels.	Money expended.										
	Pay of officers, crew, and marines.	Rations, amount commuted.	Special credits, honorable-discharge money, outfits to apprentices, etc.	Incidental expenses (postage, freight, pilotage, current repairs abroad, etc.).							
				Equipment.	Navigation.	Ordnance.	Construction and Repair.	Steam Engineering.	Supplies and Accounts.	Medicine and Surgery.	Secretary's Office.
Adams	$27,200.70	$2,627.70		$385.36	$59.50		$9.60		$202.84		$19.06
Albatross (Fish Commission)	36,273.11	6,788.40		.50					1.12		50.50
Alert	64,107.70	9,540.90		111.43	146.08	$7.96	12.63	$0.32	8.55	$219.04	341.24
Alliance	28,424.96	4,558.20	$291.00	81.89					11.58	9.58	34.10
Amphitrite	16,268.74	1,351.20	456.00	151.76		.55				.96	11.03
Atlanta	122,115.67	18,037.20		804.78	60.00		9.90	4.50	6.83	100.82	716.15
Baltimore	169,470.59	19,658.70	1,671.02	143.16	1,467.70	12.43	3,082.63	2,567.23	383.08	475.61	3,601.68
Bennington	90,514.18	14,315.70	363.00	1,110.10	1.63	.23	3.24	.03	211.39	423.71	390.64
Castine	45,757.37	5,151.60	20.00	1,488.26	6.00	2.10	2.00	14.63	18.89	40.05	325.97
Charleston	141,673.80	15,288.00	1,182.00	1,472.78	603.92	17.27	2,129.08	1,989.58	81.80	403.79	658.05
Chicago	145,928.47	17,670.60	1,844.84	1,211.52	195.65	26.21	9,320.93	24,886.33	90.40	360.21	1,737.40
Cincinnati	133,262.23	20,226.90		962.00	23.10	.05	1.80		22.65	91.70	24.96
Coast Survey vessels (7)	164,011.56	29,707.20			2.05				4.91	470.95	86.86
Columbia	186,852.57	24,118.80	153.00	2,020.89	38.63	1.20	2.90	19.43	328.07	992.71	1,205.63
Concord	92,835.47	10,472.70	418.00	783.36	181.00	24.13	1,638.04	769.40	132.97	271.26	1,396.37
Constellation	118,825.40	29,695.20	4,147.87	52.92	71.00	2.55	.63	2.31	10.68	736.20	
Cushing	14,135.14	2,275.50	77.25	62.50							7.00
Dale (receiving ship)	23,813.86	3,073.50	4,500.59		20.00				8.40	9.90	
Detroit	105,849.07	13,966.20	243.00	142.62	6.25	5.68	1,655.30	292.61	54.15	225.94	1,707.21
Dolphin	56,867.15	12,325.20	2,796.00	74.20						102.70	254.78
Essex	69,984.08	12,599.40	792.74	296.22	205.22	.20		4.10	11.88	133.99	136.32
Fern	27,444.87	5,166.30	255.00	34.00							
Fish Hawk (Fish Commission)	21,290.22	4,509.00									
Franklin (receiving ship)	68,379.46	11,598.60	4,509.00	.50	7.75				3.00	121.94	113.00
Independence (receiving ship)	60,639.46	10,233.60	16,863.00		23.25				.40	21.45	204.89
Machias	54,725.59	7,432.80	276.00	91.09	202.13	3.50	1,845.66	628.19	27.42	88.78	1,299.80
Marblehead	111,369.84	10,118.70	150.00	358.91	69.91	2.80	1.50	34.42	1,433.40	23.09	756.51
Marion	1,771.48	241.80			.40				25.70		2.10
Miantonomoh	28,732.93	3,400.20	363.00	142.50	94.00		42.60			8.25	14.40
Michigan	50,727.75	10,417.80	1,119.00	457.11	129.70	1.50	344.64	10.64	17.09	175.54	459.17
Minneapolis	98,089.24	9,317.70	183.00	1,123.91					13.01	29.29	19.61
Minnesota (receiving ship)	66,265.69	9,872.10	9,858.19	20.66	110.27		18.48	8.50	27.81	101.66	173.97
Mohican	86,188.00	14,901.60	222.00	131.26	1,726.49	10.01	45.07	11.30	565.20	56.25	55.95
Monitors (7)	33,068.37	7,598.10									
Monocacy	72,545.57	7,555.20	936.00	161.30	121.35	22.96	961.79	207.50	142.69	436.86	1,381.34

Monongahela	43,003.07	7,856.40	.....	.....	.....	.....	.....	.....	.....	12.67	11.61
Monterey	101,755.02	15,605.40	57.00	400.26	540.72	183.64	25.00	21.40	13.25	161.30	225.92
Montgomery	105,299.33	14,095.80	192.00	1,503.89	136.60	.....	28.15	17.77	6.86	135.33	513.66
Naval Academy vessels	56,993.50	10,971.60	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newark	165,067.47	18,451.80	1,272.00	421.05	632.34	19.91	2,552.76	1,060.21	617.14	1,843.79	5,094.36
New York	222,572.57	36,587.70	1,575.00	6,140.52	307.95	.90	.60	62.38	16.79	377.94	1,216.78
Olympia	63,293.76	8,767.80	.....	.....	6.05	.....	.....	.....	.....	80.27	208.02
Petrel	62,245.17	8,302.50	375.00	861.48	120.99	.....	1,718.76	3,696.80	123.04	648.87	2,745.64
Philadelphia	172,949.90	21,240.30	654.00	2,890.01	1,672.00	.....	107.01	906.37	187.87	356.64	1,014.13
Pinta	36,134.82	6,356.10	744.00	367.87	444.50	35.09	245.86	100.55	98.98	143.79	15.95
Portsmouth	46,142.24	5,964.60	.....	141.61	.....	.....	.....	.....	.....	20.65	94.33
Raleigh	130,689.79	22,161.90	612.00	450.11	213.50	.....	7.50	87.60	7.55	27.80	89.16
Ranger	63,722.39	10,252.20	588.00	72.80	1,246.05	.50	5.55	5.10	34.26	149.85	247.50
Richmond (receiving ship)	48,400.85	6,538.20	9,157.24	.....	8.85	.....	.....	.....	2.64	5.54	.72
San Francisco	165,757.12	24,326.40	1,776.00	547.14	43.25	14.20	2.78	10.88	113.23	355.92	1,251.17
Thetis	59,220.40	11,226.60	357.00	4.36	198.73	.....	.....	14.74	2.12	71.07	54.26
Vermont (receiving ship)	95,835.48	17,551.80	40,627.00	.....	159.30	.....	.....	.....	6.10	91.24	53.02
Vesuvius	32,018.17	6,062.40	753.00	40.50	.....	.....	.....	.....	.....	13.00	3.65
Wabash (receiving ship)	74,389.74	12,422.70	5,532.68	.....	23.00	.....	.....	.....	.....	36.00	.....
Wahneta	2,831.04	759.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yantic	59,380.21	6,593.40	717.00	1,331.59	437.15	35.61	11,955.97	235.18	125.38	358.63	145.05
Yorktown	86,944.72	12,112.20	546.00	574.35	.....	77.81	754.57	1,377.25	367.58	180.43	575.66
Total	4,530,657.05	670,019.40	119,315.42	29,645.03	11,763.96	508.99	38,032.93	39,047.25	5,568.90	11,032.76	30,746.28

Compilation showing cost of maintaining all naval vessels in commission during year ending June 30, 1895, excepting medical stores—Continued.

Vessels.	Value of stores expended.								
	Equipment.	Navigation.	Ordnance.	Construction and Repair.	Steam Engineering.	Supplies and Accounts.	Repairs at navy-yards while in commission.	Total.	Time in commission.
									Mos.
Adams	$1,062.06	$45.29	$2,436.83	$251.26	$4,039.08	$2,488.19	$4,917.14	$45,744.61	4½
Albatross (Fish Commission)	114.94	.....	25.73	68.70	6,726.72	33.07	4,281.22	54,364.01	12
Alert	2,681.01	41.12	1,601.03	905.04	10,865.79	4,558.94	7,772.66	102,921.44	12
Alliance	566.42	.....	168.28	213.40	928.80	1,859.01	63,446.07	100,593.29	5½
Amphitrite	276.66	80.86	2,714.18	223.13	1,658.29	1,564.19	42.88	24,800.43	2½
Atlanta	5,925.16	336.68	5,993.80	3,239.73	20,197.54	8,567.11	17,449.27	203,565.14	12
Baltimore	2,228.42	928.42	5,156.23	2,728.17	23,296.79	16,226.98	24.76	253,123.60	12
Bennington	2,434.98	968.36	2,394.19	2,427.09	26,424.96	4,824.22	26,074.29	172,881.94	12
Castine	2,198.50	676.08	2,042.23	865.52	10,840.04	4,389.94	1,746.21	75,585.39	8 11/12
Charleston	4,568.61	735.61	5,911.93	5,034.58	43,503.36	11,238.61	10,653.59	247,146.36	12
Chicago	4,122.68	364.87	3,938.20	3,478.84	31,538.96	13,730.88	55,926.56	316,373.55	10
Cincinnati	3,339.51	579.32	1,118.28	1,795.42	12,764.86	8,766.94	8,212.18	191,191.90	12
Coast Survey vessels (7)	.....	.....	.....	.....	.....	226.41	.....	194,509.94	12
Columbia	4,891.75	1,026.10	3,758.97	4,808.24	51,582.93	16,488.76	15,130.77	313,421.35	12
Concord	2,692.98	335.28	1,695.85	2,592.02	22,223.83	6,042.87	.....	144,505.53	12
Constellation	5,218.79	.....	777.36	2,702.79	15.96	144.23	285.95	162,689.84	12
Cushing	250.74	8.65	2,565.13	183.70	1,532.81	.06	2,135.32	23,233.80	12
Dale (receiving ship)	636.68	7.00	.....	5.85	.....	32.60	24.70	32,223.08	5¼
Detroit	5,282.88	132.17	1,964.37	2,244.14	18,573.91	7,426.42	8,598.72	168,370.64	12
Dolphin	1,776.21	422.94	278.01	1,356.01	8,433.49	79.27	5,115.53	89,881.49	12
Essex	3,597.79	41.54	5,082.91	1,246.48	3,539.61	6,200.20	3,296.69	107,169.37	12
Fern	654.52	29.67	.....	335.66	2,428.81	17.83	11,465.76	47,832.47	12
Fish Hawk (Fish Commission)	.....	.....	.....	.....	.....	8.35	.....	25,807.57	12
Franklin (receiving ship)	3,001.95	92.93	248.99	505.84	599.08	240.63	1,008.05	90,430.72	12
Independence (receiving ship)	7,100.57	22.43	514.42	915.33	150.82	352.41	190.94	97,232.97	12
Machias	1,760.18	89.09	1,325.93	1,019.73	9,741.61	3,467.40	1,667.32	85,192.22	9½
Marblehead	2,862.77	110.53	4,909.75	4,084.36	20,015.96	9,256.79	7,271.15	172,830.39	12
Marion	.....	.....	.....	.....	.....	.....	40,032.21	42,073.69	0½
Miantonomoh	4,307.39	80.06	2,166.47	343.78	1,096.68	1,407.09	3,469.26	45,668.61	4½
Michigan	1,794.05	141.41	1,238.26	855.54	1,862.12	228.38	.....	69,979.70	12
Minneapolis	1,559.35	394.11	1,238.06	1,733.02	16,306.61	10,811.72	2,272.37	143,091.00	3½
Minnesota (receiving ship)	2,875.35	5.75	.....	1,529.80	243.93	242.29	518.02	91,872.47	12
Mohican	5,157.66	200.93	3,405.62	2,866.18	8,707.24	4,525.34	10,925.37	139,701.47	12
Monitors (7)	1,491.64	3.96	28.84	376.59	248.24	.....	.....	43,415.74	12
Monocacy	2,675.72	13.26	592.31	2,611.66	3,618.35	8,313.09	.....	102,346.95	12
Monongahela	2,738.74	31.22	146.45	443.26	142.33	2,122.36	146.25	56,654.36	3½
Monterey	3,096.35	418.88	5,006.65	2,655.78	28,733.09	8,697.24	8,965.45	171,562.35	12
Montgomery	2,472.57	337.73	5,998.30	2,037.61	11,109.44	7,346.67	3,927.51	153,150.22	12
Naval Academy vessels	3,820.01	157.76	1,896.72	1,796.90	515.53	19.44	1,295.32	77,166.88	12

Newark	4,547.09	579.43	7,043.60	4,661.28	38,446.39	16,619.26	.....	269,029.88	12
New York	5,315.70	974.87	5,173.64	6,025.35	41,524.81	13,695.74	96,532.17	438,101.41	12
Olympia	2,922.86	243.98	734.14	2,028.76	8,966.57	4,226.55	1,716.89	93,195.65	5½
Petrel	2,482.15	127.39	1,266.53	939.47	18,101.29	4,323.90	.....	108,078.98	12
Philadelphia	3,877.52	1,204.21	1,712.83	5,591.36	32,539.27	13,474.14	29,370.17	289,747.73	12
Pinta	3,634.60	16.83	232.67	988.22	4,175.36	113.38	.....	53,848.57	12
Portsmouth	2,985.01	86.02	162.27	1,651.08	442.82	5,588.30	82.96	63,361.89	6½
Raleigh	2,628.37	56.51	7,033.63	2,844.09	18,311.60	7,141.48	76.30	192,438.89	12
Ranger	2,404.02	61.43	1,524.47	1,260.50	11,952.37	4,639.47	2,031.48	100,197.94	12
Richmond (receiving ship)	2,864.05	283.69	437.12	398.15	1,695.50	195.83	8,138.00	78,126.38	12
San Francisco	4,037.27	1,884.71	6,816.70	2,541.92	16,875.69	9,907.47	105,613.97	341,875.82	12
Thetis	3,653.82	668.12	736.68	914.91	6,725.27	267.46	9,625.06	93,740.60	12
Vermont (receiving ship)	13,328.75	569.72	1,043.90	1,957.78	1,419.32	797.69	537.61	173,978.71	12
Vesuvius	618.69	185.92	1,006.34	1,092.09	2,880.09	29.15	8,187.95	52,890.95	9½
Wabash (receiving ship)	3,362.81	57.16	269.72	1,056.67	544.03	421.63	4,156.23	102,272.37	12
Wahneta	.....	.....	.....	.....	.....	.....	5.00	3,595.34	12
Yantic	2,458.32	108.94	2,074.87	2,122.29	5,132.08	7,653.77	.....	100,865.44	12
Yorktown	2,661.43	420.27	1,406.98	2,057.73	35,772.76	6,196.20	19,923.19	171,949.13	12
Total	165,318.05	16,389.21	116,716.37	98,612.80	649,712.89	262,237.40	614,286.47	7,409,611.16	

STATEMENT F.

Statement showing the value of supplies on hand July 1, 1894, the receipts from purchase and other sources, and the expenditures during the year, and the balance on hand June 30, 1895.

			On hand July 1, 1894, with receipts and expenditures during fiscal year 1895.	Balances on hand June 30, 1895.
Balances on hand:				
Navy-yard, Portsmouth			$876,872.56	$790,848.58
Navy-yard, Boston			1,844,742.44	1,863,190.62
Naval station, Newport			314,801.43	361,848.19
Naval station, New London			11,181.66	11,435.20
Navy-yard, New York			3,415,251.25	3,787,946.17
Navy-yard, League Island			746,482.21	1,012,114.21
Naval Academy, Annapolis			274,494.95	185,206.89
Navy-yard, Washington			2,229,026.04	2,016,633.47
Naval Observatory, Washington			34,741.17	29,982.01
Naval Proving Ground			141,220.63	150,948.62
Navy-yard, Norfolk			2,049,743.78	1,837,940.46
Naval station, Port Royal			.....	2,075.14
Naval station, Key West			33,573.59	39,203.12
Navy-yard, Pensacola			531,379.53	112,253.70
Navy-yard, Mare Island			2,568,741.48	2,802,246.10
Naval station, Puget Sound			25,733.66	25,488.73
Coaling station, Honolulu, Hawaiian Islands			10,801.41	2,085.67
Coaling station, Pichilinque, Mexico			9,714.99	9,714.99
Shipments between navy-yards in transit			492,820.22	557,332.06
Total on hand July 1, 1894			15,611,323.10	
Received during the fiscal year 1895:				
Under Titles X and Y—				
From open purchase		$1,443,133.79		
From contracts		2,157,101.23		
From gain by inventory		406,932.28		
From Title Z, manufactured articles		3,420,327.50		
From Titles B and Y, transfers from ships		2,006,507.25		
			9,434,002.05	
Expended during the fiscal year 1895:			25,045,325.15	
To Title A, for use	$815,572.70			
To Title B, for use	736.48			
To Title D, for use	212,055.94			
To Title E, for use	142,407.65			
To Title F, for use	76,463.04			
To Title G, for use	506,345.84			
To Title N, for use	107,263.21			
To Title O, for use	34,614.37			
To Title V, for use	14,021.97			
To Title Z, for use	1,906,745.78			
		3,816,226.98		
To Title V, sold to other departments		12,861.95		
To Title W, condemned		609,754.27		
To Title W, revalued		1,014,368.24		
To Title B and Y, transfers to ships		3,993,617.88		
			9,446,829.32	
Total on hand June 30, 1895			15,598,495.83	15,598,495.83

STATEMENT G.

Statement of payments through the Paymaster-General's Office on contract, open-purchase, and open-contract vouchers during the fiscal year ending June 30, 1895.

Bureau.	Contract.	Open purchase.	Open contract.	Total.
Yards and Docks	$644,732.17	$95,465.43	$34,133.89	$774,331.49
Equipment	247,458.74	276,261.34	25,904.12	549,564.20
Navigation	48,857.13	74,061.92	52,833.53	175,752.58
Ordnance	4,361,422.78	667,990.00	65,462.41	5,094,875.19
Construction and Repair	95,698.46	302,724.09	6,544.95	404,967.50
Steam Engineering	105,904.61	178,110.57	5,806.82	289,822.00
Supplies and Accounts	537,049.62	33,262.00	16,528.03	586,839.65
Medicine and Surgery	67,045.54	58,636.84	26,025.55	151,707.93
Secretary's Office	5,291,781.41	4,801.18	186,476.14	5,483,058.73
Total	11,399,950.46	1,691,253.37	419,715.44	13,510,919.27

STATEMENT H.

Statement of the value of naval stores received and expended on board ships in commission for the year ending June 30, 1895.

Bureaus.	Balance on hand July 1, 1894.	Receipts.	Total receipts.	Cost of commission (use and condemned).	Expended, transferred.	Issued to officers, crew, and marines for cash.	Sold to Fish Commission and Coast Survey vessels.	Total expenditures.	Balance on hand June 30, 1895.
Equipment	$1,415,498.40	$1,568,659.32	$2,984,157.72	$181,898.19	$964,177.39	.....	$1,487.01	$1,147,562.59	$1,836,595.13
Ordnance	4,758,066.68	2,538,947.63	7,297,014.31	116,716.37	1,265,964.01	.....	.....	1,382,680.38	5,914,333.93
Construction	525,218.78	618,345.73	1,143,564.51	98,701.33	196,328.59	.....	.....	295,029.92	848,534.59
Steam Engineering	309,519.00	762,587.42	1,072,106.42	649,754.39	45,241.32	.....	.....	694,995.71	377,110.71
Supplies and Accounts	351,274.48	876,945.46	1,228,219.94	269,054.06	235,685.77	$326,529.44	.....	831,269.27	396,950.67
Total	7,359,577.34	6,365,485.56	13,725,062.90	1,316,124.34	2,707,397.08	326,529.44	1,487.01	4,351,537.87	9,373,525.03

SUMMARY.

Balance on hand July 1, 1894	$7,359,577.34	
Received during year 1894-95	6,365,485.56	
		$13,725,062.90
Expended to use and condemned	1,316,124.34	
Expended, transferred	2,707,397.08	
Issued to officers, crew, and marines for cash	326,529.44	
Sold to Fish Commission and Coast Survey vessels	1,487.01	
		4,351,537.87
Balance on hand June 30, 1895		9,373,525.03
Value of naval stores in transit from yards and stations to ships		95,268.53
Total value of naval stores on board ships and in transit		9,468,793.56

STATEMENT I.

Statement of public sales and reports of deposits during the fiscal year 1895 on account of sales of Government property.

Date of sale.	Place of sale.	By whom deposited.	Gross receipts.	Expenses of sale.	Net proceeds.	Credited to miscellaneous receipts.	Credited to appropriation— Clothing and small-stores fund.	Credited to appropriation— Ordnance material proceeds of sales.
June 18, 1894	Norfolk, Va	W. W. Galt	$190.48	$24.13	$166.35	$166.35	.....	.....
July 3, 1894	Shanghai	T. J. Cowie	63.13	.....	63.13	63.13	.....	.....
Aug. 11, 1894	Annapolis, Md.	J. Fulton	165.50	33.06	132.44	132.44	.....	.....
Sept. 8, 1894	Boston, Mass.	T. S. Thompson	100.00	2.25	97.75	97.75	.....	.....
Sept. 15, 1894	Portsmouth, N. H.	W. W. Barry	165.00	.....	165.00	165.00	.....	.....
Oct. 20, 1894	Southampton	A. S. Kenny	583.98	6.09	577.89	577.89	.....	.....
Nov. 19, 1894	Pensacola, Fla.	W. B. Wilcox	85.00	2.50	82.50	82.50	.....	.....
Dec. 4, 1894	New York, N. Y.	A. Burtis	12,015.86	2,717.38	9,298.48	424.00	$3,654.08	$5,220.40
Jan. 3, 1895	League Island, Pa.	G. H. Griffing	4,462.49	440.87	4,021.62	3,335.64	5.41	680.57
Feb. 6, 1895	Boston, Mass.	T. S. Thompson	1,711.18	47.38	1,663.80	1,663.80	.....	.....
Feb. 16, 1895	Washington, D. C.	S. Rand	16,932.47	309.12	16,623.35	199.42	21.85	16,402.08
Feb. 27, 1895	Norfolk, Va	W. W. Galt	12,466.13	815.88	11,650.25	8,828.30	351.27	2,470.68
May 1, 1895	Erie, Pa	R. T. M. Ball	63.52	10.10	53.42	.....	.....	53.42
May 14, 1895	Portsmouth, N. H.	W. W. Barry	220.00	.....	220.00	220.00	.....	.....
			49,224.74	4,408.76	44,815.98	15,956.22	4,032.61	24,827.15

List of purchasers, with amount received from each.

Navy-yard, Norfolk, Va., June 18, 1894:

W. C. Ferebee	$130.10
John Henry	40.38
J. A. Codd	20.00
	190.48

U. S. S. *Monocacy*, Shanghai, July 3, 1894:

Boyd & Co	63.13

Naval Academy, Annapolis, Md., August 11, 1894:

J. C. Smith	165.50

Navy-yard, Boston, Mass., September 8, 1894:

E. E. Mills	100.00

Navy-yard, Portsmouth, N. H., September 15, 1894:

T. W. Rand	165.00

U. S. S. *Chicago*, Southampton, October 20, 1894:

Thomas Jones	583.98

Navy-yard, Pensacola, Fla., November 19, 1894:

J. Fleming	30.00
J. Davidson	55.00
	85.00

Navy-yard, New York, N. Y., December 4, 1894:

W. J. Bannerman	1,021.07
Dreifus & Co	751.47
Alex. McKelvey	187.45
W. Stokes Kirk	226.91
W. R. Plyer	51.00
Seligman Bros	214.21
John H. Nicklin	7.80
Francis Bannerman	1,528.32
Chas. Harley & Co	2,287.54
Otto Merkel	20.00
John Doherty	35.00
J. W. Frazier	664.02
M. H. Gregory	96.45
S. E. Lund	2,682.67

Navy-yard, New York, N. Y., December 4, 1894—Continued.

M. Samuels & Sons	$117.74
John Dunne	647.27
P. Livenski	61.00
Thos. A. Greene	122.33
Geo. Scofield	481.91
L. F. S. Davis	44.05
Thos. Butler & Co	534.60
Nicholas Kane & Sons	105.00
James Robertson	16.70
Albert Deitz	5.00
Chas. J. Lawless	9.25
A. Hohorst	10.00
W. R. Bingham	5.10
W. A. Flaherty	82.00
	12,015.86

Navy-yard, League Island, Pa., January 3, 1895:

A. V. Keyser & Co	2,172.00
R. McCunliffe	3.50
F. P. Summers & Co	175.91
J. J. Schrader	566.91
Jos. Lumley	20.10
J. H. McClure & Son	459.45
S. L. Frank	331.20
A. Purvis & Son	222.00
J. Nuttall	378.59
W. R. Plyer	44.00
J. D. Holt	6.00
J. Rosenthal's Sons	6.33
Jas. Robinson	76.50
	4,462.49

Navy-yard, Boston, Mass., February 6, 1895:

S. S. Vinal & Co	58.90
Ludlow Manufacturing Co	1,652.28
	1,711.18

List of purchasers, with amount received from each—Continued.

Navy-yard, Washington, D. C., February 16, 1895:	
Joseph Bros	$27.00
J. O. R. Kuhn	10.10
Francis Bannerman	163.77
E. H. Wilson	35.00
Walter P. Keene	20.25
Julius H. Albers	25.75
W. Stokes Kirk	12.25
N. Frank & Sons	68.00
B. L. Lowenstein	582.66
Henry A. Hitner & Sons	1,517.74
E. G. Wheeler	10.00
M. H. Gregory	13,184.80
Thos. Butler & Co	52.26
Julius Dreifus	183.00
A. V. Keyser & Co	1,039.79
	16,932.47
Navy-yard, Norfolk, Va., February 27, 1895:	
John Mullen	72.91
L. E. Lunt	754.33
E. H. Wilson & Co	1,227.76
Jos. T. Johnson	20.25
Tredegar Co	823.13
L. C. Brinson	3.90
James Power & Co	75.03
W. B. Aydelotte	17.50
Mrs. J. Gallilee	61.75
W. H. Cory	6.77
John W. Anderson	9.76
Navy-yard, Norfolk, Va., February 27, 1895—Continued.	
Wm. F. Lintz	$2.60
H. A. Hitner & Sons	617.45
Geo. B. Douglass	653.38
James Edwards	3.50
J. H. Baughan	41.00
M. J. & M. Blake	3,211.65
Seligman Bros	250.12
A. V. Keyser & Co	343.27
W. R. Plyer	488.09
J. Dreifus	325.30
H. Finck	16.65
N. Frank & Sons	2,384.85
W. Stokes Kirk	249.77
P. Murphy	298.06
N. B. Woolford	508.35
Thos. Talbott	2.00
	12,466.13
U. S. S. *Michigan*, Erie, Pa., May 1, 1895:	
Hays Manufacturing Co	10.50
Pennsylvania Brass Works	51.77
H. Schock	.75
J. Kretz	.50
	63.52
Navy-yard, Portsmouth, N. H., May 14, 1895:	
A. Junkins	220.00

RECAPITULATION.

Washington	$16,932.47
Norfolk	12,656.61
New York	12,015.86
League Island	4,462.49
Boston	1,811.18
Annapolis	165.50
Portsmouth	385.00
Southampton	583.98
Pensacola	85.00
Erie	63.52
Shanghai	63.13
Gross proceeds	49,224.74
Expenses of sales	4,408.76
Net proceeds	44,815.98
Deposited to credit:	
Miscellaneous receipts	15,956.22
Clothing and small-stores fund	4,032.61
Ordnance material, proceeds of sales	24,827.15
Total	44,815.98

STATEMENT J.

SCHEDULE OF PROPOSALS RECEIVED.

Proposals for annual supplies for the Naval Home, Philadelphia, Pa., under Bureau advertisement dated May 10, 1894; opened May 29, 1894.

Class 1.—Brushes:	
Nelms & Co.*	$202.88
Chas. J. Field	281.79
Chas. S. McNally	257.20
Shoemaker & Busch	217.23
J. Jacob Shannon & Co	241.69
Class 2.—Building material	
Thompson C. Gill & Co*	392.36
A. P. Swoyer & Co	579.75
Paul J. Field	580.25
John Marshall	440.95
Class 3.—Signal halyards:	
Chas. J. Field*	57.48
J. Jacob Shannon & Co	89.36
Class 4.—Clothing, etc.:	
Wanamaker & Brown*	6,048.00
Garritee & Son	6,295.50
Class 5.—Boots and shoes:	
P. J. Hallihan	1,115.00
Edward Duffy	1,143.00
Wm. R. Thompson*	1,078.00
Robt. Holland	1,103.00
Class 6.—Dry goods:	
Thos. G. Hood	1,225.49
Wm. Hampton*	1,153.03
Class 7.—Coal:	
David S. Wells	3,272.00
Sam'l G. French	3,360.50
Frank F. Mathers*	3,245.00
Thomas McConnell	4,023.00
Henry W. Peacock	3,374.50
John Marshall	3,362.50
Hutchinson Coal Co	3,630.00
Delaware Ice and Coal Co	3,510.00
Wm. Bryant	3,510.00
James N. Jennings	3,329.00
Class 8.—Firewood:	
John G. Andrews	186.25
Frank F. Mathers	180.25
Thomas McConnell	312.50
J. Jacob Shannon & Co	220.00
John Marshall*	168.75
Class 9.—Kitchen utensils, etc.:	
Chas. J. Field*	607.67
Paul J. Field	830.99
J. Jacob Shannon & Co	690.27
Class 10.—Furniture, etc.:	
Chas. J. Field*	538.60
Paul J. Field	580.00
Wm. Hempton	587.00
J. Jacob Shannon & Co	549.90
Class 11.—Glass:	
Brooklyn Hardware and Sporting Goods Co	231.95
Charles J. Field	104.50
Wm. J. Flynn	167.42
Chas. S. McNally	142.20
Shoemaker & Busch*	95.23
J. Jacob Shannon & Co	157.12
John Lucas & Co	116.99
Class 12.—Hardware:	
Chas. J. Field*	326.76
Paul J. Field	450.21
J. Jacob Shannon & Co	329.13
Class 13.—Lumber:	
Elias Pohl	$1,308.25
Chas P. Maule*	1,234.50
Class 14.—Paints, etc.:	
Smith, Kline & French Co.*	658.62
Wm. J. Flynn	830.00
Chas. S. McNally	839.04
Shoemaker & Busch	779.83
Phœnix Paint Co	1,227.05
Clifford Pemberton	714.30
Geo. L. Neville	754.51
John Lucas & Co	710.00
Class 15.—Provender:	
S. S. Daish & Son	279.23
Paul J. Field	319.50
John Marshall*	247.00
Chas. Hieber & Co	258.00
Wm. Brown	248.70
Class 16.—Groceries:	
W. H. Belford	11,475.75
Horace M. Doan Co., Limited	8,953.25
Robt. McKeown	6,604.30
William Deering	7,263.92
Sam'l Sproul*	6,227.70
Class 17.—Provisions:	
W. H. Belford	10,001.00
Dan'l Snyder & Son	7,801.50
Thomas Bradley	8,168.00
Wm. Roesch*	6,928.50
Class 18.—Bread, etc.:	
W. H. Belford	2,094.00
Geo. W. Wanklin*	1,840.00
Sam'l Sproul	1,990.00
Geo. Goetz	1,980.00
Class 19.—Tools:	
Chas. J. Field*	125.45
Paul J. Field	216.20
J. Jacob Shannon & Co	128.63
Class 20.—Ice:	
Knickerbocker Ice Co.*†	390.00
Delaware Ice and Coal Co	390.00
Class 21.—Soap etc.:	
Robt. McKeown	345.95
Shoemaker & Busch	344.52
Wm. Deering	444.64
J. Jacob Shannon & Co	482.65
Oliver Parker*	323.61
Class 22.—House furnishings:	
Chas. J. Field*	77.80
J. Jacob Shannon & Co	100.90
Class 23.—Fresh vegetables, etc.:	
John Kienzle	3,675.00
Robt. McKeown	3,695.00
John E. Fitzgerald	3,437.50
Wm. Roesch	4,687.50
Sam'l Sproul*	3,332.50
Class 24.—Sperm oil, etc.:	
Chas. J. Field	49.00
Chas. S. McNally	37.30
Shoemaker & Busch*	35.10
J. Jacob Shannon & Co	41.80
Class 25.—Milk:	
Michael Dougherty*	1,365.00

*Accepted.

† Tie bid.

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated May 19, 1894; opened June 5, 1894.

Class 1.—Hardware:	
Bradford, Kennedy Sons & McGuire	$124.47
Francis Harral	136.30
W. T. & F. B. Weaver	217.72
J. H. Chesley & Co	122.32
Brooklyn Hardware and Sporting Goods Co	118.50
Class 2.—White pine:	
W. T. Gallaher & Bro	1,956.30
National Supply and Investment Co.*	1,698.80
Thos. W. Smith	2,020.50
Nathan B. Gaskill	1,865.00
W. T. & F. B. Weaver	1,831.00
Class 2.—White pine—Continued.	
Geo. L. Neville	$2,265.00
Class 3.—Alcohol:	
Shoemaker & Busch*	109.50
Class 4.—Tools:	
Charles A. Moore	45.01
Brooklyn Hardware and Sporting Goods Co.*	35.84
Class 5.—Files:	
F. P. May & Co	1,105.36
Chas. A. Moore*	1,100.61
McFadden Co	1,239.77
Brooklyn Hardware and Sporting Goods Co	1,379.57

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated May 18, 1894; opened June 5, 1894.

Class 1.—25,000 pounds butter:	
James F. Oyster*	$5,617.50
Simpson, McIntyre & Co	5,982.50
Chas. E. Ahrens	6,222.50
Class 2.—10,000 watch caps:	
Wm. H. Horstmann Co	4,100.00
The Manhattan Supply Co	3,670.00
Joseph A. Joel	3,925.00
Thos. G. Hood*	3,437.00
Sam'l Barron	3,785.00
Class 3.—Lamps, etc.:	
Porter's Son & Co	935.13
Class 3.—Lamps, etc.—Continued.	
The Manhattan Brass Co.*	$919.75
Wm. Porter's Sons	943.85
Class 4.—Condenser tubes:	
S. C. Forsaith Machine Co	17,521.97
The Manhattan Supply Co	15,961.80
Geo. H. Clowes	15,961.80
The Ansonia Brass and Copper Co.	15,961.80
Bridgeport Brass Co.*†	15,961.80
The Armenian Tube Works	15,961.80
Merchant & Co	15,961.80
Geo. L. Neville	15,961.80

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated May 16, 1894; opened June 5, 1894.

Class 1.—American hemp:	
W. J. Loughridge	$5,850.50
S. C. Forsaith Machine Co	7,080.00
David S. Gay	6,900.00
W. Bush Nelson*	5,835.00
Class 2.—Galvanized steel wire:	
Geo. L. Neville	$2,479.12
The Manhattan Supply Co.*	2,328.50
Washburn & Moen Mfg. Co	2,813.85
Western Electric Co	3,004.75

Proposals for fresh provisions and provender for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—1,600 pounds each fresh beef and vegetables: ‡	
Belford & Morrison	$0.12½
	.03½
Herman R. Paul	.10 9/100
	.02 4/100
D. C. Norton & Co	.10½
	.03
A. Harrison	.09
	.03
Class 2.—1,300 pounds fresh bread: †	
Willard S. Spinner	.05½
Class 2.—Bread—Continued.	
Herman R. Paul	$0.06
D. C. Norton & Co	.04 11/16
A. Harrison	.06
Class 3.—Provender:	
H. A. Yeaton	1,592.00
Ephraim C. Spinney*	1,591.00
John Dunne	1,722.82
Littlefield & Dixon	1,680.82
D. C. Norton & Co	1,721.30
A. Harrison	1,654.60

Proposals for fresh provisions and provender for the navy-yard, Boston, Mass., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—45,000 pounds fresh beef and vegetables:	
George A. Sanderson	$0.08
	.01½
Belford & Morrison	.12
	.03½
Harrington Bros	.07
	.02
A. Harrison	.14
	.04
Chas. A. Simonds	*†.07
	*†.02
Class 2.—30,000 pounds fresh bread:	
Geo. A. Sanderson*	.03 43/100
Belford & Morrison	.04¾
Harrington Bros	.03 9/100
Class 2.—Bread—Continued.	
A. Harrison	$0.06
Class 3.—30,000 pounds ice:	
Driver's Union Ice Co	.005
Geo. A. Saunderson	.0045
John Dunne	.0037
Belford & Morrison	.0039
A. Harrison	.005
Chas. A. Simonds	.0075
Class 4.—Provender:	
S. S. Daish & Son	1,540.25
Geo. A. Saunderson	1,834.75
John Mullett & Co	1,359.95
John Dunne*	1,326.25
A. Harrison	1,367.75

* Accepted. † By lot. ‡ No award.

Proposals for fresh provisions and provender for the naval station, Newport, R. I., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—40,000 pounds each fresh beef and vegetables:	
John T. Reagan *	$0.08½
	.02¾
A. Harrison	.11
	.03
Class 2.—30,000 pounds fresh bread:	
John T. Reagan	.04
Jeremiah J. Lynch	.03½
A. Harrison	.06
Class 3.—200,000 gallons fresh water:	
John Dunne *	$0.70
A. Harrison	1.00
Class 4.—Provender:	
S. S. Daish & Son	1,252.25
John Dunne *	1,075.55
H. Wallace Briggs	1,103.65
A. Harrison	1,245.00

Proposals for fresh provisions and provender for the naval station, New London, Conn., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—11,500 pounds each fresh beef and vegetables:	
A. Harrison	$0.11
	.03
Chas. H. Klinck *	.07½
	.02½
Belford & Morrison	.11½
	.03
Class 2.—9,200 pounds fresh bread:	
A. Harrison	$0.06
John O'Hea *	.03¾
Belford & Morrison	.05
Class 3.—Provender:	
S. S. Daish & Son	505.64
A. Harrison	465.70
John Dunne *	397.00

Proposals for fresh provisions and provender for the New York Navy-Yard, under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—165,000 pounds each fresh beef and vegetables:	
Belford & Morrison	$0.08½
	.01½
Andrew Koch	.09
	.03
Michael Cloonen	.06½
	.01½
A. Harrison	.05½
	.00½
W. H. Evans *	.05 19/100
	.00¾
Class 2.—150,000 pounds fresh bread:	
Belford & Morrison	.03½
Anton Behler *	.02½
Herman Reher and T. J. McKenzie	.04
Andrew Koch	.02¾
A. Harrison	.02¾
Class 3.—200,000 pounds navy biscuit:	
The Treadwell & Harris Baking Co. *	.02 84/100
A. Harrison	.05
Class 4.—120,000 pounds ice:	
The Knickerbocker Ice Co. *	$0.00 18/100
John Dunne	.00½
Michael Cloonen	.00 1/10
A. Harrison	.00½
Class 5.—Provender for New York:	
S. S. Daish & Son	3,243.00
John Moonan	2,390.00
Wm. M. Shipman Sons	2,418.34
John Dunne	2,365.40
A. Harrison	2,906.05
Chas. H. Rickerson *	2,258.78
Arthur McConnell	2,798.16
Class 6.—Provender for Dover, N. J.:	
John Moonan *	473.00
John Dunne	555.50
A. Harrison	512.30

Proposals for fresh provisions and provender for the navy-yard, League Island, Pa., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—6,000 pounds each fresh beef and vegetables:	
L. Shuster Boraef & Co. *	$0.10
	.03
Belford & Morrison	.11
	.02¾
Class 2.—4,500 pounds fresh bread:	
L. Shuster Boraef & Co	.04½
Belford & Morrison *	.03 33/100
Class 3.—100,000 pounds ice:	
John Dunne *	.00 7/100
Class 3.—Ice—Continued.	
Chas. B. Rees, Son & Co	$0.00 1/10
Knickerbocker Ice Co	.00 1/10
Belford & Morrison	.00 1/10
Class 4.—Provender for League Island:	
John Dunne	1,917.78
The P. A. Swartz Co. *	1,614.75
Wm. Brown	1,651.78
Class 5.—Provender for Fort Mifflin:	
The P. A. Swartz Co	226.96
Wm. Brown *	213.46

Proposals for fresh provisions and provender for the Naval Academy, Annapolis, Md., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—5,000 pounds each fresh beef and vegetables:	
Wm. J. Brewer *	$0.10
	.05
Class 2.—4,000 pounds fresh bread:	
Marton M. Smith *	.04
Class 3.—20,000 pounds ice:	
Joseph S. M. Basil *	$0.00 1/10
Class 4.—Provender:	
Joseph S. M. Basil	1,041.75
Henry B. Myers *	1,012.25

* Accepted.

Proposals for fresh provisions and provender for the navy-yard, Washington, D. C., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—2,500 pounds each fresh beef and vegetables: †	
A. Harrison	$0.11
	.03
Class 2.—2,000 pounds fresh bread:	
A. Harrison	.06
Chas. Snyder*	.03 8/10
Class 3.—85,000 pounds ice:	
The Independent Ice Co.*	$0.00 5/10
A. Harrison	.00 5/10
Class 4.—Provender:	
A. Harrison	1,400.90
John Dunne	1,188.75
B. B. Earnshaw & Bro.*	1,139.60
S. S. Daish & Son	1,199.50

Proposals for fresh provisions and provender for the navy-yard, Norfolk, Va., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—50,000 pounds each fresh beef and vegetables:	
D. S. Baum*	$0.05 37/100
	.01 7/10
Sam'l Westheimer	.05 42/100
	.01 40/100
Louis Wasserman	.05 36/100
	.01 35/100
A. Harrison	.11
	.03
Class 2.—50,000 pounds fresh bread:	
J. D. Cabler*	.02 48/100
Class 2.—Bread—Continued.	
F. Rieger	$0.02 7/10
A. Harrison	.06
Class 3.—95,000 pounds ice:	
John K. Gann* †	.00 7/10
A. Harrison	.01
Class 4.—Provender:	
S. S. Daish & Son	2,197.00
Lindsay & Co.*	1,543.68
O. L. Williams	1,636.54
A. Harrison	2,213.40

Proposals for fresh provisions for the naval station, Key West, Fla., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—10,000 pounds each fresh beef and vegetables:*	
A. Harrison	$0.14
	.04
Class 2.—8,000 pounds fresh bread:*	
A. Harrison	$0.06
Class 3.—14,600 pounds ice:*	
A. Harrison	.01

Proposals for fresh provisions and provender for the navy-yard, Pensacola, Fla., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—3,000 pounds each fresh beef and vegetables:	
Fred Bauer	*$0.09¾
	*.03¼
Wm. L. Hubbird	.14½
	.06¼
John S. Bell	.14
	.06
A. Harrison	.14
	.04
Class 2.—2,000 pounds fresh bread:	
Fred Bauer	.04¾
Class 2.—Bread—Continued.	
Moses White*	$0.04½
Jno. S. Bell	.06
A. Harrison	.06
Class 3.—47,040 pounds ice:†	
E. E. Saunders & Co	.01¼
A. Harrison	.01
Class 4.—Provender:	
Fred Bauer*	774.78
A. Harrison	823.00

Proposals for fresh provisions and provender for the navy-yard, Mare Island, Cal., under Bureau advertisement dated May 17, 1894; opened June 5, 1894.

Class 1.—100,000 pounds each fresh beef and vegetables:	
Mark Strauss	$0.06 74/100
	.01 21/100
Sam'l Brown	*.06
	*.01½
Class 2.—100,000 pounds fresh bread:‡	
Mark Strauss	.07 93/100
John B. Flemming	.06
Class 3.—100,000 pounds navy biscuit:	
T. E. Chadbourne	.06
Geo. H. Garthorne*	.05 9/10
Class 4.—22,000 pounds ice:	
O. C. Smith*	$0.01¼
Henry Connelly	.01 48/100
Class 5.—Provender:	
Louis E. Lake*	3,963.00
Thos. H. Calvin	4,043.25
James Brownlie	4,697.14
M. L. Kelley	4,277.00
Corcoran & Collins	4,420.12

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated May 24, 1894; opened June 12, 1894.

Class 1.—1,950 gallons linseed oil:	
Chas. M. Childs & Co	$1,152.00
Clifford Pemberton*	1,089.00
The Manhattan Oil Co	1,167.00
Class 2.—9,000 gallons lubricating oil:	
The New York Lubricating Oil Co.*	2,467.50
The Swan & Finch Co	2,771.00
The Manhattan Oil Co	2,670.00
Fiske Bros	3,216.00
Class 3.—400 gallons cylinder oil:	
The Swan & Finch Co.*	$106.00
Bourne, Scrymser Co	216.00
The Manhattan Oil Co	140.00
Fiske Bros	131.60
Class 4.—3,000 gallons lard oil:	
The Swan & Finch Co	1,737.00
The Manhattan Oil Co	1,770.00
Fiske Bros.*	1,736.40

*Accepted. †No award. ‡No award; open purchase.

Proposals for supplies for the New York Navy-yard, etc.—Continued.

Class 5.—Boiler tubes:	
The Allison Manufacturing Co	$6,065.62
The Tyler Tube and Pipe Co.*	5,051.25
Pancoast & Rogers	7,380.00
Morris, Tasker & Co	8,160.00
Geo. L. Neville	7,680.00
Class 6.—2,000 blacking brushes:	
The Enterprise Brush Co	378.20
Francis Harral	385.00
Geo. L. Neville	500.00
Jacob Volbel*	359.00
The Manhattan Supply Co	394.00
F. M. McWilliams	386.00
John H. Tissot, jr	380.00
Martin J. McGowan	379.60
Nelms & Co	386.00
Class 7.—2,000 scrub brushes:	
The Enterprise Brush Co	328.60
Francis Harral	304.00
Jacob Volbel*	289.00
The Manhattan Supply Co	328.00
F. M. McWilliams	303.00
John H. Tissot, jr	300.00
Martin J. McGowan	304.20
Nelms & Co	303.00
Class 8.—2,000 wisp brooms:	
Francis Harral	259.00
The Manhattan Supply Co.*	258.00
F. M. McWilliams	275.00
John H. Tissot, jr	288.00
Martin J. McGowan	259.40
Class 9.—2,000 mattresses:	
Abraham Abraham	$5,580.00
Charles P. Rogers & Co	5,700.00
John Dawson	6,340.00
The Manhattan Supply Co	6,380.00
Martin J. McGowan	5,480.00
Wm. A. Weaver	5,177.80
Thos. M. Farley*	5,116.40
Class 10.—4,000 blankets:	
B. Y. Pippey & Co.*	7,500.00
Martin J. McGowan	9,700.00
Class 11.—6,000 mattress covers:	
Abraham Abraham	3,465.00
John P. Nawrath	3,450.00
The Manhattan Supply Co	3,462.00
F. M. McWilliams	4,062.00
John H. Tissot, jr	3,600.00
Martin J. McGowan*	3,375.00
Wm. A. Weaver	4,011.00
Thos. M. Farley	3,758.40
Class 12.—50,000 spools sewing silk:	
C. H. Keith	1,468.75
Abraham Abraham*†	1,100.00
John P. Nawrath	1,100.00
The Brainard & Armstrong Co	1,165.00
John H. Tissot, jr	1,500.00
Martin J. McGowan	1,125.00
Heminway & Bartlett Silk Co	1,125.00

Proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated May 23, 1894; opened June 19, 1894.

Class 1.—Nuts, etc.:	
Dunham, Carrigan & Hayden Co.*	$124.04
J. H. Sternbergh & Son	124.73
Class 2.—Brushes and brooms:	
Louis E. Lake	771.10
W. P. Fuller & Co.*	492.18
Armes & Dallam	575.92
Charles M. Yates	696.90
Francis Harral	547.45
Class 3.—Cotton canvas:	
F. M. McWilliams	1,212.18
Murphy, Grant & Co.*	1,104.57
Class 4.—Bunting:	
F. M. McWilliams*	63.60
Class 5.—Glass:	
W. P. Fuller & Co.*	62.92
Class 6.—Coal baskets:	
Louis E. Lake	435.00
Armes & Dallam*	385.00
Class 7.—Hardware:	
Dunham, Carrigan & Hayden Co.*	353.99
Francis Harral	383.10
Class 8.—Leather, etc.:	
Louis E. Lake	108.50
A. C. Nichols & Co.*	79.50
Wm. Frank	96.00
Class 9.—Lumber.	
A. S. Carman*	2,168.40
Wm. Walker	2,348.50
Abraham Powell	2,350.00
W. H. Leahy	2,367.00
Class 10.—Lumber:	
A. S. Carman	1,540.50
Wm. Walker*	1,517.50
Abraham Powell	1,532.50
W. H. Leahy	1,592.50
Class 11.—Metals:	
Selby Smelting and Lead Co.*	2,256.21
Class 12.—Iron and steel:	
Dunham, Carrigan & Hayden Co.*	854.74
Class 13.—Packing, etc.:	
H. P. Gregory & Co	561.75
Arnett & Rivers	647.75
Bowers Rubber Co	587.20
Boston Woven Hose and Rubber Co*	521.00
Harry T. Lally	531.75
Class 14.—Alcohol:	
W. P. Fuller & Co.*	348.00
Class 15.—Paints:	
W. P. Fuller & Co.*	$350.80
John Lucas & Co	422.77
Chas. M. Childs & Co	384.25
Wagner Bros	434.52
Chas. M. Yates	376.80
Class 16.—Red lead:	
W. S. Miller	275.00
W. P. Fuller & Co	275.00
Chas. M. Yates*†	275.00
Clifford Pemberton	288.00
Class 17.—White lead:	
W. S. Miller	862.50
W. P. Fuller & Co	825.00
F. N. Woods*	775.50
Wagner Bros	975.00
Chas. M. Yates	825.00
Clifford Pemberton	864.00
Class 18.—Varnishes:	
W. P. Fuller & Co	374.00
John Lucas & Co	385.00
Charles M. Childs & Co	302.50
Chas. M. Yates*	256.50
Class 19.—Brown zinc and white zinc:	
W. P. Fuller & Co	349.00
John Lucas & Co	397.50
Charles M. Childs & Co	420.00
Wagner Bros	506.00
Charles M. Yates*	337.50
Clifford Pemberton	481.00
Class 20.—Mineral Oil:‡	
W. S. Miller	240.00
W. P. Fuller & Co	337.50
Chas. M. Yates	360.00
Class 21.—Valves, etc.:	
H. P. Gregory & Co	111.38
Dunham, Carrigan & Hayden Co.*	61.31
Harry T. Lally	61.74
Class 22.—Files:	
Dunham, Carrigan & Hayden Co.*	427.34
Francis Harral	451.37
Class 23.—Tools:	
Dunham, Carrigan & Hayden Co	740.65
Francis Harral*	722.27
Class 24.—Waste, etc.:	
Louis E. Lake	822.30
W. P. Fuller & Co.*	711.00
Armes & Dallam	735.50

* Accepted. † Tie bid. ‡ No award.

Proposals for supplies for the Mare Island Navy-yard—Continued.

Class 24.—Waste, etc.—Continued.	
Chas. M. Yates	$758.00
Abraham Powell	1,236.50
Class 25.—Cement:	
Louis E. Lake	103.50
A. S. Carman	81.00
Wm. Walker	88.50
Abraham Powell*	80.70
Class 26.—Broken stone:	
A. S. Carman	54.80
Wm. Walker*	46.00
Abraham Powell	53.80
Class 27.—Piles:	
A. S. Carman*	$1,459.20
Wm. Walker	1,543.75
Abraham Powell	1,520.00
W. H. Leahy	1,638.75
Class 28.—Steel I beams:	
Dunham, Carrigan & Hayden Co	1,468.04
S. C. Forsaith Machine Co	1,648.89
Carnegie Steel Co.*	1,462.72

Supplies for the New York Navy-Yard, under Bureau advertisement dated June 1, 1894; opened June 19, 1894.

Class 1.—Rolled zinc.	
George L. Neville*	$882.86
S. C. Forsaith Machine Co	957.38
Eugene L. Maxwell	1,073.92
The Manhattan Supply Co	1,803.75
Class 2.—Carpet:	
Wm. Berri's Sons	1,120.00
Sheppard Knapp & Co.*	960.00
Hardenbergh & Co	980.00
Abraham Abraham	1,060.00
Class 3.—Bunting:	
Thos. M. Turner	5,946.20
F. M. McWilliams*	4,173.20
John H. Tissot, jr	5,207.14
The Manhattan Supply Co	5,410.94
Class 4.—Muslin:	
F. M. McWilliams	234.10
Class 4.—Muslin—Continued:	
John H. Tissot, jr.*	$212.75
The Manhattan Supply Co	233.40
Class 5.—Needles and thread:	
John P. Nawrath	365.66
F. M. McWilliams	711.60
John H. Tissot, jr	359.73
The Manhattan Supply Co.*	334.45
Class 6.—Paper bags, etc.:	
F. M. McWilliams	304.90
Eugene L. Maxwell*	186.30
John H. Tissot, jr	190.40
The Manhattan Supply Co	275.00
Class 7—Flax, ravens:	
F. M. McWilliams*	96.00
John H. Tissot, jr	102.00
The Manhattan Supply Co	108.00

Supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated June 2, 1894; opened June 19, 1894.

Class 1.—Nuts, rivets, etc.:	
George L. Neville	$134.93
J. H. Chesley & Co	187.67
Ira B. White	142.23
W. H. H. Cory	165.30
H. M. Sternbergh	152.60
McFadden Co.*	126.88
The Manhattan Supply Co	160.65
Class 2.—Brooms and brushes:	
George L. Neville*	521.30
Ira B. White	582.30
Francis Harral	581.72
The Manhattan Supply Co	650.00
John H. Tissot, jr	539.88
Class 3.—Cotton canvas:	
George L. Neville	1,715.50
The Mount Vernon Co	1,666.00
W. M. Cathrall†	903.82
F. M. McWilliams	1,150.42
The Manhattan Supply Co	1,186.80
John H. Tissot, jr.*	1,144.12
Class 4.—Flax canvas:	
George L. Neville	278.00
Ira B. White	272.00
F. M. McWilliams*	264.00
John H. Tissot, jr	276.00
Class 5.—Hardware:	
George L. Neville*	386.79
J. H. Chesley & Co	402.07
Ira B. White	392.93
McFadden Co	421.54
The Manhattan Supply Co	428.62
Class 6.—Belting and leather:	
George L. Neville	211.80
The S. C. Forsaith Machine Co	184.50
Ira B. White*	175.50
W. H. H. Cory	199.80
Stevenson Bro. & Co	249.10
Eugene L. Maxwell	180.25
The Manhattan Supply Co	224.02
Class 7.—Metals:	
George L. Neville	366.50
J. H. Chesley & Co.*	356.40
The S. C. Forsaith Machine Co	424.70
Ira B. White	369.50
W. H. H. Cory	391.75
The Ajax Metal Co	382.88
Class 8.—Bar iron:	
George L. Neville	$97.05
J. B. Kendall	101.25
W. H. H. Cory	94.58
H. M. Sternbergh*	87.00
The Manhattan Supply Co	114.00
Class 9.—Bar steel:	
George L. Neville*	663.00
J. B. Kendall	704.50
The Manhattan Supply Co	912.00
Class 10.—Alcohol:	
Smith, Kline & French Co	260.00
Shoemaker & Busch*	224.00
Class 11.—Paints, etc.:	
George L. Neville	226.35
Ira B. White	250.75
Fiske Bros	290.00
Smith, Kline & French Co	227.98
Shoemaker & Busch	233.25
Charles H. Pleasants*	199.98
The Manhattan Supply Co	335.40
Class 12.—Turpentine:	
George L. Neville*	190.00
Ira B. White	194.50
Smith, Kline & French Co	235.00
Charles H. Pleasants	194.80
Class 13.—Red lead:	
George L. Neville	443.75
John Lucas & Co	432.50
The S. C. Forsaith Machine Co	439.75
Ira B. White*	399.20
Wetherill & Bro	440.00
Smith, Kline & French Co	405.00
Shoemaker & Busch	459.20
Class 14.—White lead:	
George L. Neville	435.00
John Lucas & Co	472.50
The S. C. Forsaith Machine Co	483.30
Ira B. White	449.10
Wetherill & Bro	483.75
Smith, Kline & French Co.*	445.50
Shoemaker & Busch	516.60
Charles H. Pleasants	561.60
Class 15.—Varnishes:	
George L. Neville	446.40
John Lucas & Co	483.95
Ira B. White*	366.30

*Accepted.

†Withdrawn.

Supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 15.—Varnishes—Continued.	
Valentine & Co	$405.50
Shoemaker & Busch	402.75
Charles H. Pleasants	430.85
The Manhattan Supply Co	477.00
Class 16.—White zinc:	
George L. Neville	172.50
John Lucas & Co	180.00
The S. C. Forsaith Machine Co	240.00
Ira B. White	163.50
Valentine & Co	210.00
Smith, Kline & French Co.*	157.50
Shoemaker & Busch	225.00
Charles H. Pleasants	270.00
Class 17.—Mineral oil:	
George L. Neville	90.00
Fiske Bros.*	42.00
Stevenson, Bro. & Co	75.00
Class 18.—Files:	
George L. Neville	296.37
J. H. Chesley & Co	295.65
The J. Barton Smith Co.*	244.59
Ira B. White	290.85
Eugene L. Maxwell	269.12
McFadden Co	291.13
Francis Harral	290.92
The Manhattan Supply Co	291.18
John H. Tissot, jr	308.60
Class 19.—Tools:	
George L. Neville*	390.84
J. H. Chesley & Co	453.39
Class 19.—Tools—Continued.	
Ira B. White	$424.07
McFadden Co	415.59
Francis Harral	414.01
The Manhattan Supply Co	476.91
John H. Tissot, jr	440.73
Class 20.—Beeswax:	
George L. Neville	173.40
Ira B. White	166.00
Fiske Bros	186.00
Stevenson, Bro. & Co	218.00
Shoemaker & Busch*	153.25
McFadden Co	173.40
Charles H. Pleasants	181.40
The Manhattan Supply Co	184.00
Class 21.—Tallow:	
George L. Neville*	32.00
Ira B. White	44.90
Fiske Bros	35.00
Stevenson, Bro. & Co	50.00
Charles H. Pleasants	34.95
Class 22.—1 revolving head screw machine:	
George L. Neville	1,750.00
The S. C. Forsaith Machine Co.†	1,140.00
Walter L. Clark	1,574.00
Ira B. White	1,649.50
The Lodge & Davis Machine Tool Co.*	1,370.00
The Manhattan Supply Co	1,495.00

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated June 14, 1894; opened July 3, 1894.

Class 1.—Tool steel:	
A. P. Swoyer & Co	$775.57
Sanderson Bros. Steel Co	405.00
E. J. Brooks & Co	514.35
The Benjamin Atha & Illingworth Co	658.13
J. B. Kendall	472.50
Park Bro. & Co	765.45
Carpenter Steel Co	675.00
The Cumberland Steel & Tin Plate Co	405.00
Eugene L. Maxwell*	334.12
George L. Neville	1,350.00
The Midvale Steel Co — Bid *a*	405.00
" *b*	675.00
" *c*	1,062.50
" *d*	2,700.00
Class 1.—Tool steel—Continued.	
Chas. Burgess	$810.00
Brown & Co	438.75
Class 2.—Forgings:	
The Bethlehem Iron Co.*	324.00
The Midvale Steel Co	360.00
Class 3.—Copper:	
Jesse Lewisohn	9,190.00
James Clendenin*	8,940.00
J. B. Kendall	8,950.00
The American Metal Co	9,080.00
George L. Neville	12,000.00
Class 4.—Nuts:	
J. H. Sternbergh	515.00
J. B. Kendall*	385.00
George L. Neville	404.25

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated June 13, 1894; opened July 3, 1894.

Class 1.—Flannel lining, etc.:	
J. P. Nawrath	$1,521.70
The Manhattan Supply Co.*	1,442.00
Simon F. Rothschild	1,457.87
Louis Wechsler	1,507.60
John H. Tissot, jr	1,455.75
Class 2.—Twill:	
J. P. Nawrath* ‡	480.00
The Manhattan Supply Co	498.40
Simon F. Rothschild	506.40
Louis Wechsler	480.00
John H. Tissot, jr	480.00
Class 3.—Spool cotton:	
J. P. Nawrath*	580.00
The Manhattan Supply Co	608.00
Simon F. Rothschild	665.09
Louis Wechsler	667.20
John H. Tissot, jr	605.99
Class 4.—Sewing silk:	
J. P. Nawrath	514.00
Simon F. Rothschild	491.67
Heminway & Bartlett Silk Co	510.00
Louis Wechsler*	479.50
Class 5.—Silk laces:	
J. P. Nawrath*	111.00
John H. Tissot, jr	114.90
Class 6.—Rubber buttons:	
J. P. Nawrath	$715.00
The Manhattan Supply Co	720.00
Wm. W. Foulkrod*	701.30
Louis Wechsler	729.00
John H. Tissot, jr	725.00
The India Rubber Comb Co	730.00
Class 7.—Bone buttons:	
J. P. Nawrath	189.00
The Manhattan Supply Co	195.00
Wm. W. Foulkrod	164.01
Simon F. Rothchild*	150.30
Louis Wechsler	171.75
John H. Tissot, jr	181.23
Class 8.—Cotton drill:	
J. P. Nawrath*	4,085.00
The Manhattan Supply Co	6,500.00
F. M. McWilliams	5,437.50
Louis Wechsler	5,000.00
Class 8.—Cotton drill—Continued.	
John H. Tissot, jr	4,245.00
Class 9.—Cloth for trousers:	
Wendell, Fay & Co	25,836.00
Conschohocken Woolen Co	24,375.00
Sullivan, Vail & Co.*	23,527.50
Buena Vista Cassimere Mills	23,887.50

* Accepted. † Informal. ‡ Tie bid.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 9—Cloth for trousers—Continued.	
B. Y. Pippey & Co	$25,500.00
The Burlington Woolen Co	31,800.00
Class 10.—Cloth for caps:	
Wendell, Fay & Co	15,147.00
Conshohocken Woolen Co	14,700.00
Sullivan, Vail & Co	14,185.00
Buena Vista Cassimere Mills*	13,925.00
B. Y. Pippey & Co	15,900.00
The Burlington Woolen Co	16,300.00
Class 11.—Lamps and fixtures: ‡	
Porter's Son & Co	1,226.99
Wm. Porter's Sons	1,025.08
Class 12.—Brushes:	
The Manhattan Supply Co	100.90
John H. Tissot, jr.*	45.78
Class 13.—Drills, etc.:	
Eugene L. Maxwell	59.25
The Manhattan Supply Co	57.30
Francis Harral	55.95
Class 13.—Drills, etc.—Continued.	
Brooklyn Hardware and Sporting Goods Co	$53.37
John H. Tissot, jr.*	48.75
Class 14.—Purchases:	
Eugene L. Maxwell	140.16
The Manhattan Supply Co	147.96
Francis Harral	164.25
Brooklyn Hardware and Sporting Goods Co	149.70
John H. Tissot, jr.*	134.25
Class 15.—Gutta percha:	
Fiske Bros	148.15
The Manhattan Supply Co.*	138.18
Class 16.—Tools:	
The Manhattan Supply Co	1,120.63
Francis Harral*	932.39
Brooklyn Hardware and Sporting Goods Co	1,033.68
John H. Tissot, jr	1,130.01

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated June 21, 1894; opened July 10, 1894.

Class 1.—Hardware:	
Francis Harral	$404.31
J. H. Chesley & Co.*	292.01
The Manhattan Supply Co	450.80
Brooklyn Hardware and Sporting Goods Co	318.46
John H. Tissot, jr	342.93
Class 2.—Leather:	
S. C. Forsaith Machine Co.*	70.60
The Manhattan Supply Co	88.80
Geo. L. Neville	110.00
Henry S. Manning	71.80
John H. Tissot, jr	85.60
Class 3.—White pine:	
S. C. Forsaith Machine Co	3,440.00
Geo. L. Neville	4,800.00
Chas. E. Pell	2,772.50
Watson & Pittinger*	2,700.00
The Export Lumber Co	2,745.00
Class 4.—Poplar:	
S. C. Forsaith Machine Co	1,137.50
Geo. L. Neville	2,000.00
Chas. E. Pell	781.25
Watson & Pittinger*	780.00
The Export Lumber Co	800.00
Class 5.—Mahogany:	
George L. Neville	1,990.00
Charles E. Pell	1,260.00
Watson & Pittinger*	1,176.00
The Export Lumber Co	1,280.00
Class 6.—White cedar:	
Robert R. Kloess	595.00
Charles E. Pell	650.00
Watson & Pittinger*	560.00
Class 7.—Yellow pine:	
George L. Neville	600.00
Charles E. Pell	265.00
Watson & Pittinger	265.00
The Export Lumber Co.*	235.00
Class 8.—Alcohol:	
Shoemaker & Busch	1,297.50
Ross & Keany	1,350.00
Class 9.—Paints:	
Charles M. Childs & Co.*	503.86
Fiske Bros	733.25
Clifford Pemberton	578.75
John Lucas & Co	627.25
Valentine & Co	535.88
Shoemaker & Busch	735.00
Class 10.—Tallow:	
Charles M. Childs & Co	$120.00
Fiske Bros.*	68.20
Clifford Pemberton	75.00
Geo. L. Neville	160.00
Class 11.—Drills:	
Francis Harral*	152.40
S. C. Forsaith Machine Co	228.96
Henry S. Manning	204.48
Class 12.—Files:	
Francis Harral	199.80
J. H. Chesley & Co	199.32
The Manhattan Supply Co	201.48
Brooklyn Hardware and Sporting Goods Co.*	173.61
The J. Barton Smith Co	177.36
Henry S. Manning	187.50
John H. Tissot, jr	248.04
Class 13.—Tools:	
Francis Harral*	298.53
The Manhattan Supply Co	305.20
Brooklyn Hardware and Sporting Goods Co	307.05
John H. Tissot, jr	340.40
Class 14.—Soap:	
Fiske Bros	41.50
Geo. L. Neville	(‡)
John H. Tissot, jr.*	31.50
Class 15.—Lard oil:	
Fiske Bros	14,873.04
The Manhattan Oil Co	15,060.00
The Swan & Finch Co.*	14,720.00
Geo. L. Neville	18,800.00
Josiah Macy's Sons	17,140.00
Class 16.—Lubricating oil:	
Fiske Bros	2,397.60
The New York Lubricating Oil Co.	2,910.00
The Manhattan Oil Co	2,820.00
The Swan & Finch Co.*	1,914.00
Geo. L. Neville	7,200.00
Class 17.—Cylinder oil:	
Fiske Bros*	608.00
The Manhattan Oil Co	1,140.00
The Swan & Finch Co	718.40
Geo. L. Neville	2,800.00
Class 18.—Lamps and lamp fixtures:	
Wm. Porter's Sons*	6,047.70
The Manhattan Brass Co	6,609.55
Porter's Sons & Co	6,242.35

* Accepted. † No award. ‡ Informal.

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated July 5, 1894; opened July 24, 1894.

Class 1.—Canvas, etc.:	
F. M. McWilliams	$4,611.30
The Manhattan Supply Co.*	4,524.00
Fearing Hall & Whiton	4,552.20
The Mt. Vernon Co	4,889.14
John H. Tissot, jr	4,717.40
Geo. L. Neville	5,762.00
Class 2.—Beeswax:	
F. M. McWilliams	44.20
John Mullett & Co	44.20
The Manhattan Supply Co	52.00
The S. C. Forsaith Machine Co	44.85
Geo. L. Neville	52.00
Shoemaker & Busch*	37.38
Class 3.—Corn brooms:	
Nelms & Co	300.00
F. M. McWilliams	330.00
Francis Harral	232.50
John Mullett & Co	285.00
The Manhattan Supply Co	240.00
Fearing Hall & Whiton	281.25
Bolles & Wilde	262.50
John Tissot, jr.*	228.75
Geo. L. Neville	375.00
Brooklyn Hardware and Sporting Goods Co	270.00
Class 4.—Scrubbing brushes:	
F. M. McWilliams	176.25
A. E. Burton & Co	225.00
Francis Harral	149.50
John Mullet & Co	165.00
The Manhattan Supply Co	135.00
Fearing Hall & Whiton	157.50
Bolles & Wilde	150.00
John H. Tissot, jr	150.00
The S. C. Forsaith Machine Co	219.00
Geo. L. Neville	375.00
Jacob Voelbel*	120.00
Class 5.—Deck scrubbing brushes:	
Nelms & Co	760.00
F. M. McWilliams	614.00
A. E. Burton & Co	834.00
Francis Harral	586.00
John Mullett & Co	662.00
The Manhattan Supply Co	564.00
Fearing Hall & Whiton	410.00
Class 5.—Scrubbing brushes—Cont'd.	
Bolles & Wilde	$659.00
John H. Tissot, jr	564.50
Geo. L. Neville	400.00
Jacob Voelbel*	330.00
Class 6.—Boatswains' calls, etc.:	
F. M. McWilliams	186.00
Francis Harral*	127.60
The Manhattan Supply Co	157.60
Bolles & Wilde	211.30
Geo. L. Neville	200.00
Brooklyn Hardware and Sporting Goods Co	178.00
Class 7.—Squilgees:	
F. M. McWilliams	112.50
Francis Harral	107.50
John Mullet & Co	155.00
The Manhattan Supply Co	117.50
Bolles & Wilde	105.00
John H. Tissot, jr.*	99.75
Geo. L. Neville	300.00
Jacob Voelbel	112.50
Class 8.—Tags:	
F. M. McWilliams	122.00
Francis Harral	107.00
The Manhattan Supply Co.*	92.80
Bolles & Wilde	108.00
Class 9.—Twine:	
F. M. McWilliams	1,070.00
Francis Harral	1,052.50
The Manhattan Supply Co.*	935.00
John H. Tissot, jr	1,215.00
Geo. L. Neville	1,325.00
Shoemaker & Busch	985.00
Class 10.—Hemp manila:	
The Manhattan Supply Co.*	16,365.00
Geo. H. Allen	17,900.00
The Lawrence Cordage Works	17,400.00
The S. C. Forsaith Machine Co	17,209.00
Class 11.—Steel wire:	
The Manhattan Supply Co	1,836.50
Washburn & Moen Mfg. Co	2,132.25
Royce & Marean	2,237.93
The Trenton Iron Co.*	1,758.75
Geo. L. Neville	1,952.50

Proposals for coal for United States naval hospitals, etc., under Bureau advertisement dated July 2, 1894; opened August 2, 1894.

Class 1.—Naval hospital, Portsmouth, N. H.:	
J. A. & A. W. Walker*	$390.00
S. W. Niemeyer	800.00
Samuel G. French	448.00
Class 2.—Naval hospital, Chelsea, Mass.:	
C. A. Campbell*	1,314.00
J. E. Lewis & Co	1,332.00
Samuel G. French	1,497.00
Class 3.—Naval hospital, New York:	
Geo. W. Winant & Son	3,527.50
David Duncan & Son	3,510.50
Peale, Peacock & Kerr	3,417.00
Samuel G. French*	3,264.00
Moquin & Offerman	3,372.50
Joseph K. Wells	3,374.50
Barber & Zeigler	3,383.00
Class 4.—Naval hospital, Philadelphia, Pa.:	
Peale, Peacock & Kerr*	1,862.00
Edward S. Lowry	1,880.00
Samuel G. French	2,029.00
Joseph B. Mathers	1,880.00
Thomas McConnell	2,069.50
Class 5.—Dispensary, League Island, Pennsylvania:	
S. W. Niemeyer	50.00
Peale, Peacock & Kerr	28.70
Edward S. Lowry	26.25
Samuel G. French*	24.60
Joseph B. Mathers	30.00
Class 6.—Naval hospital, Washington:	
S. W. Niemeyer	$1,000.00
Charles Werner*	473.00
Executors of G. L. Sheriff	490.00
Stephenson & Bro	550.00
Class 7.—Naval dispensary, navy-yard, Washington:	
S. W. Niemeyer	80.00
Chas. Werner	43.92
Executors of G. L. Sheriff*†	43.92
Stephenson & Bro	44.00
Class 8.—Museum of Hygiene:	
S. W. Niemeyer	950.00
Charles Werner*	449.55
Executors of G. L. Sheriff	473.40
Stephenson & Bro	514.50
Class 9.—Naval dispensary, Washington:	
S. W. Niemeyer	150.00
Charles Werner	82.35
Executors of G. L. Sheriff*	79.80
Stephenson & Bro	82.50
Class 10.—Naval hospital, Norfolk:	
The E. C. Brooks Co	2,615.00
Samuel P. Oast	2,450.00
S. W. Niemeyer	4,000.00
Peale, Peacock & Kerr (inc.)*	2,115.00
W. J. Parker	2,120.00
Geo. W. Taylor & Co	2,175.00
Samuel G. French	2,220.00
Joseph M. Hatton & Co	2,370.00
The Nottingham & Wrenn Co	2,185.00

* Accepted. † Informal.

Proposals for coal for United States naval hospitals, etc.—Continued.

Class 11.—Naval dispensary, Norfolk, Va.:	
The E. C. Brooks Co.	$38.08
Samuel P. Oast	42.00
S. W. Niemeyer	56.00
W. J. Parker	35.70
Samuel G. French	38.08
Joseph M. Hatton & Co.	36.68
The Nottingham & Wrenn Co.*	35.35
Class 12.—Naval hospital, Pensacola, Fla.:	
S. W. Niemeyer	200.00
Class 12.—Naval hospital, Pensacola, Fla.—Continued.	
Samuel G. French	$140.00
Cary & Co.*	85.00
Class 13.—Naval hosp., Mare Island, Cal.:	
William Walker	3,430.00
John L. Howard	2,782.50
Samuel G. French	3,640.00
John Rosenfeld	2,460.50
R. Dunsmuir & Sons	a 2,968.00
	b 2,793.00
	c.* 2,292.50

Proposals for fuel for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 1.—Coal (anthracite):	
J. A. & A. W. Walker*	$6,584.10
W. H. Sise	9,845.00
Samuel G. French	6,945.64
Joseph K. Wells	6,791.46
Charles E. Walker	6,680.00
Peale, Peacock & Kerr (inc.)	6,989.32
David Duncan & Son	7,367.44
Class 2.—Coal (Lehigh):	
J. A. & A. W. Walker	434.50
W. H. Sise	800.00
Samuel G. French	580.00
Joseph K. Wells	454.40
Charles E. Walker*	425.00
David Duncan & Son	512.50
S. W. Niemeyer	627.50
Class 3.—Coal (bituminous):	
J. A. & A. W. Walker	1,975.00
W. H. Sise	1,900.00
Samuel G. French	1,940.00
Charles G. Walker*	1,925.00
Class 3.—Coal—Continued.	
Peale, Peacock & Kerr (inc.)	$1,910.00
David Duncan & Son	2,070.00
Class 4.—Coal (bituminous):	
J. A. & A. W. Walker	1,817.00
W. H. Sise	1,820.00
Samuel G. French	1,784.80
Charles E. Walker*	1,771.00
Peale, Peacock & Kerr	1,789.40
David Duncan & Son	1,904.40
Class 5.—Wood:	
J. A. & A. W. Walker*	175.00
Samuel G. French	224.00
Charles E. Walker	210.00
Elmer E. Laughton	189.00
Joseph H. Hubbard	204.40
Class 6.—Charcoal:	
J. A. & A. W. Walker *†	56.00
Samuel G. French	56.00
Charles E. Walker	80.00

Proposals for fuel for the navy-yard, Boston, Mass., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 7.—Coal (anthracite):	
Samuel G. French	$7,491.00
Joseph K. Wells	7,557.00
Garfield & Proctor Coal Co.	7,408.50
B. F. Wild & Co.	7,342.50
C. A. Campbell	7,227.00
Peale, Peacock & Kerr	7,656.00
David Duncan & Son	7,903.50
E. B. Townsend*	6,880.50
Class 8.—Coal (anthracite, niter depot):	
Samuel G. French	38.40
C. A. Campbell*	29.88
Class 9.—Coal (bituminous):	
Samuel G. French	13,920.00
Garfield & Proctor Coal Co.	14,160.00
B. F. Wild & Co.	14,600.00
C. A. Campbell	12,440.00
Peale, Peacock & Kerr	13,480.00
David Duncan & Son	13,960.00
Curran & Burton	13,780.00
E. B. Townsend*	13,560.00
Class 10.—Coal (bituminous, Passaic, and Wabash):	
Samuel G. French	1,764.00
Garfield & Proctor Coal Co.	1,999.00
Class 10.—Coal—Continued.	
C. A. Campbell	$1,688.00
Peale, Peacock & Kerr	1,782.00
David Duncan & Son	2,214.00
Curran & Burton	2,466.00
E. B. Townsend*	1,842.00
Class 11.—Coal (bituminous): ‡	
C. A. Campbell	4,625.00
Peale, Peacock & Kerr	4,687.50
David Duncan & Son	4,862.50
Curran & Burton	5,593.75
E. B. Townsend	5,625.00
Class 12.—Coal (bituminous):	
Garfield & Proctor Coal Co.	1,097.40
B. F. Wild & Co.	1,132.50
C. A. Campbell*	1,044.70
Peale, Peacock & Kerr	1,112.90
David Duncan & Son	1,143.90
E. B. Townsend	1,112.90
Class 13.—Coke: ‡	
E. B. Townsend	3,095.00
Class 14.—Charcoal: ‡	
S. W. Niemeyer	120.00
Class 15.—Wood:	
C. A. Campbell*	8.00

Proposals for the naval station, Newport, R. I., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 16.—Coal (anthracite) for torpedo station:	
Samuel G. French	$3,745.50
Joseph K. Wells*	3,720.75
Peale, Peacock & Kerr	3,958.00
David Duncan & Son	3,786.75
Class 17.—Coal (bituminous), equipment torpedo station:	
Samuel G. French	1,197.20
Peale, Peacock & Kerr*	1,161.12
David Duncan & Son	1,210.32
Class 18.—Coal (bituminous):	
Samuel G. French	$1,343.20
Peale, Peacock & Kerr	2,292.64
David Duncan & Son*	1,431.52
Class 19.—Coal (anthracite) for torpedo station:	
Samuel G. French*	5,950.75
Joseph K. Wells	5,980.00
Peale, Peacock & Kerr	6,293.50
David Duncan & Son	6,227.00

* Accepted. † By lot. ‡ No award.

Proposals for the naval station Newport, R. I., etc.—Continued.

Class 20.—Coal (bituminous) for torpedo station:	
Samuel G. French	$896.00
David Duncan & Son *	86.25
Class 21.—Coal (bituminous), equipment torpedo station:	
Samuel G. French	905.20
Peale, Peacock & Kerr *	890.32
David Duncan & Son	915.12
Class 22.—Coal (anthracite) for War College:	
Samuel G. French	$947.00
Joseph K. Wells *	922.00
Peale, Peacock & Kerr	989.00
David Duncan & Son	997.00
Class 23.—Wood for War College:	
Samuel G. French *	55.20

Proposals for fuel for the naval station, New London, Conn., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 24.—Coal (bituminous):	
Samuel G. French	$429.00
Peale, Peacock & Kerr	462.00
David Duncan & Son *	442.80
S. W. Niemeyer	960.00

Proposals for fuel for the navy-yard, New York, under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 25.—Coal (anthracite):	
Samuel G. French *	$18,897.90
Joseph K. Wells	19,217.70
Curtis & Blaisdell	20,341.25
Barber & Ziegler	19,288.40
Moquin & Offerman	19,151.65
Geo. W. Winant & Son	19,339.50
Peale, Peacock & Kerr	19,868.10
David Duncan & Son	19,462.20
Class 26.—Coal (anthracite):	
Samuel G. French	1,970.00
Joseph K. Wells	1,965.00
Curtis & Blaisdell	2,122.50
Barber & Ziegler	1,965.00
Moquin & Offerman	2,000.00
Geo. W. Winant & Son	2,015.00
Peale, Peacock & Kerr	2,035.00
David Duncan & Son *	1,945.00
Class 27.—Coal (bituminous):	
The New Central Coal Co. †	10,187.50
Warren C. Barber	10,198.20
John D. Trainer	9,902.60
Berwind-White Coal Mining Co.	9,459.20
Clearfield Bituminous Coal Corporation *	7,892.52
Samuel G. French	9,483.04
Davis Coal and Coke Co	9,607.00
Moquin & Offerman	9,516.60
Geo. W. Winant & Son	9,730.82
Peale, Peacock & Kerr	9,134.04
David Duncan & Son	8,808.88
Class 28.—Coal (bituminous):	
Warren C. Barber	29,500.00
John D. Trainer	30,400.00
Berwind-White Coal Mining Co.*	27,500.00
Clearfield Bituminous Coal Corp'n	24,000.00
Samuel G. French	27,400.00
Davis Coal and Coke Co	28,000.00
Moquin & Offerman	26,800.00
Geo. W. Winant & Son	27,000.00
Peale, Peacock & Kerr	26,400.00
David Duncan & Son	24,800.00
Class 29.—Coal (bituminous):	
The New Central Coal Co.†	$7,512.50
Warren C. Barber	7,762.50
John D. Trainer	7,312.50
Berwind-White Coal Mining Co.*	6,682.50
Clearfield Bituminous Coal Corporation	6,007.50
Samuel G. French	6,740.00
Davis Coal and Coke Co	7,025.00
Moquin & Offerman	6,975.00
Geo. W. Winant & Son	7,087.50
Peale, Peacock & Kerr	6,440.00
David Duncan & Son	6,277.50
Class 30.—Coal (bituminous):	
The New Central Coal Co.†	1,121.25
Warren C. Barber	1,017.75
John D. Trainer	1,048.80
Berwind-White Coal Mining Co.*	948.75
Clearfield Bituminous Coal Corporation	828.00
Samuel G. French	924.00
Davis Coal and Coke Co	966.00
Moquin & Offerman	924.00
Geo. W. Winant & Son	941.85
Peale, Peacock & Kerr	945.30
David Duncan & Son	855.00
Class 31.—Coke:	
Samuel G. French	464.00
Davis Coal and Coke Co	416.00
Peale, Peacock & Kerr	412.00
David Duncan & Son *	360.00
Class 32.—Charcoal:	
Samuel G. French	611.80
John McConnell	557.17
Geo. W. Winant & Son	798.00
Long Island Charcoal Co.*	502.55
Class 33.—Pine wood:	
Samuel G. French	220.00
S. W. Niemeyer	293.75
Max Morganstern *	172.25

Proposals for fuel for the navy-yard, League Island, Pa., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 34.—Coal (anthracite):	
Samuel G. French	$3,127.90
Joseph B. Mathers	2,984.50
Peale, Peacock & Kerr *	2,921.45
Joseph B. Van Dusen, jr	2,957.50
Class 35.—Coal (bituminous):	
The Clearfield Bituminous Coal Corporation *	800.00
Samuel G. French	812.80
Class 35.—Coal—Continued.	
Davis Coal and Coke Co	$960.00
Joseph B. Mathers	940.80
Peale, Peacock & Kerr	892.80
Joseph B. Van Dusen, jr	944.00
Class 36.—Charcoal: ‡	
Samuel G. French	12.50
S. W. Niemeyer	18.75
Geo. L. Neville	25.00

* Accepted. † Informal. ‡ Open purchase.

Proposals for fuel for the Naval Academy, Annapolis, Md., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 37.—Coal (anthracite):	
Henry B. Meyers	$976.00
Joseph S. M. Basil*	796.00
Samuel G. French	868.00
Lynah & Read	800.00
Peale, Peacock & Kerr	868.00
S. W. Niemeyer	1,600.00
Class 38.—Coal (bituminous):	
Henry B. Meyers	11,165.00
Samuel G. French	10,780.00
Davis Coal and Coke Co.*	9,730.00
Wm L. Read	10,430.00
Lynah & Read	10,220.00
Peale, Peacock & Kerr	10,815.00
Class 39.—Coal (gas):	
Westmoreland Coal Co.*	3,660.00
Samuel G. French	3,940.00
Wm. L. Read	3,700.00
Class 39.—Coal—Continued.	
Ehlen Bros	$3,800.00
Peale, Peacock & Kerr	3,970.00
Class 40.—Coal (anthracite):	
Henry B. Meyers	292.80
Joseph S. M. Basil	238.80
Samuel G. French	268.80
Lynah & Read*	240.00
Peale, Peacock & Kerr	317.40
S. W. Niemeyer	510.00
Class 41.—Coal (bituminous):	
Henry B. Meyers	957.00
Samuel G. French	924.00
Davis Coal and Coke Co.*	834.00
Wm. L. Read	894.00
Lynah & Read	876.00
Peale, Peacock & Kerr	927.00

Proposals for fuel for the navy-yard, Washington, D. C., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 42.—Coal (bituminous):	
Johnson Bros	$4,168.75
Samuel G. French	4,495.00
Wm. L. Read*	4,118.00
John Miller	4,321.00
J. Maury Dove	4,205.00
Peale, Peacock & Kerr	5,133.00
Class 43.—Coal (bituminous):	
Johnson Bros	3,162.50
Samuel G. French	3,410.00
Wm. L. Read*	3,124.00
John Miller	3,278.00
J. Maury Dove	3,190.00
Peale, Peacock & Kerr	3,894.00
Class 44.—Coal (bituminous):	
Johnson Bros	23,000.00
Samuel G. French	24,800.00
Wm. L. Read*	22,720.00
John Miller	23,840.00
J. Maury Dove	23,200.00
Class 44.—Coal—Continued.	
Peale, Peacock & Kerr	$28,320.00
Class 45.—Coal (anthracite):	
Stephenson & Brothers	1,677.50
John Miller*	1,250.00
Peale, Peacock & Kerr	1,464.55
S. W. Niemeyer	1,787.50
Class 46.—Coal (bituminous), at Indian Head:	
John Miller*	300.00
Peale, Peacock & Kerr	411.75
S. W. Niemeyer	525.00
Class 47.—Charcoal:	
George W. Clark	700.00
N. Wakefield	525.00
W. T. & F. B. Weaver*	493.75
Johnson Bros	543.75
John F. Clarke	499.50
Geo. L. Neville	700.00

Proposals for fuel for the navy-yard, Norfolk, Va., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 48.—Coal (anthracite):	
The Nottingham & Wrenn Co.*	$711.60
Samuel G. French	825.00
W. & J. Parker	783.50
E. C. Brooks Co	816.25
Samuel P. Oast	924.50
S.W. Niemeyer	1,021.00
Geo. W. Taylor & Co	821.40
Class 49.—Coal (Lehigh):	
The Nottingham & Wrenn Co	936.00
Samuel G. French	1,280.00
W. & J. Parker*	920.00
E. C. Brooks Co	1,080.00
Peale, Peacock & Kerr	948.00
S. W. Niemeyer	1,400.00
Geo. W. Taylor & Co	936.00
Class 50.—Coal (bituminous):	
Davis Coal and Coke Co	11,800.00
Pocahontas Coal Co.*	11,200.00
Geo. W. Taylor & Co	13,600.00
Class 51.—Coal (bituminous):	
Davis Coal and Coke Co	14,500.00
Pocahontas Coal Co.*	14,000.00
Geo. W. Taylor & Co	14,650.00
Class 52.—Coal (bituminous) for Franklin and Monitors:	
Chesapeake and Ohio	(†)
Davis Coal and Coke Co*	$2,740.00
E. C. Brooks Co	3,475.00
Pocahontas Coal Co	(†)
Geo. W. Taylor & Co	(†)
Class 53.—Coal (anthracite):	
The Nottingham & Wrenn Co	167.00
Samuel G. French	209.30
W. & J. Parker*	160.25
E. C. Brooks Co	181.25
Samuel P. Oast	186.50
S. W. Niemeyer	227.50
Geo. W. Taylor & Co	191.45
Class 54.—Coke.	
The Nottingham & Wrenn Co	648.70
Davis Coal and Coke Co.*	624.00
Geo. L. Neville	650.00
Class 55.—Charcoal:	
Geo. W. Clark*	384.00
The Nottingham & Wrenn Co	448.00
S. W. Niemeyer	1,280.00
Geo. L. Nevill	446.08

Proposals for fuel for the navy-yard, Pensacola, Fla., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 56.—Pine wood:	
F. Bauer*	$95.25
Benj. Dolphin	97.50

* Accepted. † Informal.

Proposals for fuel for the navy-yard, Mare Island, Cal., under Bureau advertisement dated July 21, 1894; opened August 21, 1894.

Class 57.—Coal (bituminous):	
R. Dunsmuir & Son	$18,720.00
J. McDonough	18,720.00
John L. Howard*	17,400.00
Samuel G. French	31,200.00
John Rosenfeld	18,690.00
Class 58.—Coal (bituminous):	
R. Dunsmuir & Son	17,565.60
J. McDonough	17,565.60
John L. Howard*	16,327.00
Samuel G. French	29,276.00
John Rosenfeld	17,537.45
Class 59.—Coal (Cumberland):	
John L. Howard*	1,856.00
Samuel G. French	2,400.00
Wm. Walker	2,480.00
Class 60.—Coal (anthracite):	
John L. Howard*	$274.50
Samuel G. French	420.00
John Rosenfeld	329.10
Wm. Walker†	465.00
Class 61.—Coke:	
Abraham Powell*	10,002.75
Wm. Walker	(†)
Class 62.—Pine wood:	
R. J. R. Aden	222.00
Abraham Powell	277.50
Wm. Walker*	277.50
Class 63.—Charcoal:	
R. J. R. Aden*	90.00
Abraham Powell	105.00
Wm. Walker	120.00

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated July 23, 1894; opened August 21, 1894.

Class 1.—Curled hair:	
Miller, Sloss & Scott*	$270.00
Thomas F. Farley	(†)
Manhattan Supply Co	270.00
Louis E. Lake	365.00
Class 2.—Thread, etc.:	
Miller, Sloss & Scott	42.00
Charles J. Hendry's Sons & Co	42.00
Thos. F. Farley†	47.55
Manhattan Supply Co	41.40
Louis E. Lake*	30.00
Class 3.—Leather:	
Miller, Sloss & Scott	254.00
Chas. J. Hendry's Sons & Co	300.00
Chas. C. Nichols	228.00
S. C. Forsaith Machine Co.*	212.20
Louis E. Lake	238.00
Wm. Frank	220.00
Thos. R. Hays	226.00
Class 4.—Grommets, etc.:	
Miller, Sloss & Scott	278.26
Chas. J. Hendry's Sons & Co	239.61
George L. Neville	297.25
Dunham, Carrigan & Hayden Co.*	184.71
Manhattan Supply Co	283.25
Class 5.—Beeswax:	
Miller, Sloss & Scott	72.00
S. C. Forsaith Machine Co.*	69.60
Louis E. Lake	70.00
Class 6.—Pipe fittings:	
A. P. Swoyer & Co	88.77
Miller, Sloss & Scott	115.00
Geo. L. Neville	112.80
Dunham, Carrigan & Hayden Co.*	72.68
Class 6.—Pipe fittings—Continued.	
S. C. Forsaith Machine Co	$79.11
Class 7.—Pipe:	
A. P. Swoyer*	89.00
Miller, Sloss & Scott	171.51
Geo. L. Neville	136.50
Class 8.—Crude oil:	
Miller, Sloss & Scott	1,033.33
George W. Young*	840.00
Class 9.—Engine lathe:	
Fitchburg Machine Works	280.00
Miller, Sloss & Scott	408.00
Pratt & Whitney Co	366.00
E. L. Maxwell	260.00
Manhattan Supply Co	394.00
S. C. Forsaith Machine Co	292.00
Walter L. Clark*	249.00
Lodge & Davis Machine Tool Co	360.00
Class 10.—Shaping machines:	
Miller, Sloss & Scott	344.00
Pratt & Whitney Co	490.00
E. L. Maxwell	258.00
Manhattan Supply Co	310.00
S. C. Forsaith Machine Co	197.00
Walter L. Clark*	189.00
Lodge & Davis Machine Tool Co	230.00
Class 11.—Drilling machine:	
Miller, Sloss & Scott	379.00
Pratt & Whitney Co	375.00
E. L. Maxwell	50.00
Manhattan Supply Co	397.50
S. C. Forsaith Machine Co	87.50
Walter L. Clark*	49.00
Lodge & Davis Machine Tool Co	205.00

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated July 25, 1894; opened August 21, 1894.

Class 1.—Flax canvas:	
N. Boynton & Co.*	$840.00
Manhattan Supply Co	947.50
F. M. McWilliams	992.50
John H. Tissot, jr	1,035.00
Class 2.—Cotton canvas:	
Fearing, Hall & Whiton	3,450.32
Mount Vernon Co	3,274.25
N. Boynton & Co	3,305.17
Manhattan Supply Co	3,406.20
Class 2.—Cotton canvas—Continued.	
F. M. McWilliams	$3,278.12
W. M. Cathrall*	3,150.21
A. P. Swoyer & Co	3,343.70
Class 3.—Cotton sheeting: ‡	
George L. Neville	360.00
N. Boynton & Co.*	171.00
Class 4.—Iron for cable:	
George L. Neville ‡	4,770.00
Brown & Co	6,678.00

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated July 24, 1894; opened August 21, 1894.

Class 1.—Brushes:	
George L. Neville	$1,000.00
Manhattan Supply Co	540.00
Jacob Voelbel*	515.00
F. M. McWilliams	930.00
Francis Harral	755.00
Jno. H. Tissot, jr	525.00
Class 2.—Corn brooms:	
George L. Neville	$375.00
Ira B. White	213.00
Manhattan Supply Co	216.00
Brooklyn Hardware and Sporting Goods Co.*	187.50
F. M. McWilliams	247.50

* Accepted. † Informal. ‡ No award.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 3.—Corn brooms—Continued.	
Francis Harral	$195.00
John H. Tissot, jr	232.50
Class 3.—Brass pipe:	
Ansonia Brass Co	1,186.72
Bridgeport Brass Co	1,186.72
American Tube Works	1,186.40
George L. Neville *†	1,186.40
A. P. Swoyer & Co	1,186.72
H. Belfield & Co. ‡	1,138.93
Manhattan Supply Co	1,186.40
Merchant & Co	1,186.72
Edward F. Keating	1,186.40
Class 4.—Pipe fittings:	
George L. Neville	223.37
A. P. Swoyer & Co	188.83
Edward Barr Co., Limited *	161.22
H. Belfield & Co	215.46
Manhattan Supply Co	185.46
Brooklyn Hardware and Sporting Goods Co	223.74
Eugene L. Maxwell	198.70
S. C. Forsaith Machine Co	268.22
Francis Harral	172.46
John H. Tissot, jr	179.14
Edward F. Keating	187.22
Class 5.—Valves:	
A. P. Swoyer & Co	39.74
Edward Barr Co., Limited	46.85
H. Belfield & Co	47.48
Manhattan Supply Co	46.13
Brooklyn Hardware and Sporting Goods Co	56.01
Merchant & Co.*	33.09
S. C. Forsaith Machine Co	53,44
John H. Tissot, jr	51.38
Edward F. Keating	64.05
Class 6.—Green coffee:	
C. J. Caughey *	20,470.00
Jno. J. O'Rorke	21,170.00
Charles E. Ahrens	21,000.00
Class 7.—Lamps, etc.:	
Porter's Son & Co	466.14
Wm. Porter's Son *	445.90
Brooklyn Hardware and Sporting Goods Co	528.90
Manhattan Supply Co	497.40
Class 8.—Brushes:	
Ira B. White	453.10
Manhattan Supply Co	472.02
Brooklyn Hardware and Sporting Goods Co.*	424.10
Francis Harral	435.20
Class 9.—Squirt cans:	
Porter's Son & Co	$68.75
Wm. Porter's Son	62.80
Geo. L. Neville	80.00
Manhattan Supply Co	56.00
Brooklyn Hardware and Sporting Goods Co.*	53.00
Francis Harral	57.00
John H. Tissot, jr	65.00
Class 10.—Lamps:	
Porter's Son & Co	243.84
Wm. Porter's Son	184.56
Geo. L. Neville *	164.00
Manhattan Supply Co	819.00
Brooklyn Hardware and Sporting Goods Co	313.52
Class 11.—Plumbago:	
George L. Neville	335.00
Manhattan Supply Co.*	242.00
Stevenson Bro. & Co	(‡)
Fiske Bros	249.00
Francis Harral	255.00
Class 12.—Shellac:	
Geo. L. Neville	450.00
Ira B. White	342.00
Shoemaker & Busch	338.75
Manhattan Supply Co	370.00
Fiske Bros. *	335.00
F. M. McWilliams	342.50
Class 13.—Wrenches:	
A. P. Swoyer & Co	163.70
Manhattan Supply Co	206.09
Brooklyn Hardware and Sporting Goods Co.*	119.41
S. C. Forsaith Machine Co	215.67
Francis Harral	176.62
John H. Tissot, jr	157.20
Class 14.—Waste:	
Jno. P. Nawrath *	496.00
Geo. L. Neville	640.00
Edward Barr Co., Limited	552.00
Shoemaker & Busch	587.20
Manhattan Supply Co	538.40
Stevenson Bro. & Co	810.00
Eugene L. Maxwell	519.20
S. C. Forsaith Machine Co	515.20
Fiske Bros	519.20
F. M. McWilliams	537.00
Chas. E. Ahrens	540.00
Francis Harral	559.00

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated July 26, 1894; opened August 21, 1894.

Class 1.—Steel forgings:	
Midvale Steel Co.*	$636.48
Bethlehem Iron Co	856.80
Class 2.—Tools:	
Albert L. Pitney	33.06
J. H. Chesley & Co.*	30.16
S. C. Forsaith Machine Co	32.43
Ira B. White	31.75
The Manhattan Supply Co	30.40
Frank E. Hopkins	34.45
Class 3.—Files:	
Albert L. Pitney	1,362.27
Brooklyn Hardware and Sporting Goods Co.*	835.49
Eugene L. Maxwell	892.12
Frank E. Hopkins	1,245.36
Class 4.—Lumber (white pine):	
George L. Neville	682.50
Nathan B. Gaskill	661.00
Philip Walsh & Sons	753.75
National Supply and Investment Co	673.35
W. T. & F. B. Weaver	603.50
Church & Stephenson *	557.50
Barber & Ross	683.50
Thomas W. Smith	607.00
Class 5.—Lumber (yellow pine):	
George L. Neville	$220.00
Nathan B. Gaskill	275.00
Philip Walsh & Sons	200.00
National Supply and Investment Co	210.00
W. T. & F. B. Weaver	175.00
Church & Stephenson	175.00
Barber & Ross	209.50
Thomas W. Smith *	170.00
Class 6.—Lumber (white oak):	
L. Ledman	240.00
George L. Neville	500.00
Nathan B. Gaskill	257.50
L. A. Clarke	175.00
Philip Walsh & Sons	450.00
J. B. Kendall	280.00
National Supply and Investment Co	375.00
W. T. & F. B. Weaver	205.00
Church & Stephenson	215.00
Barber & Ross	400.00
Thomas W. Smith	220.00
D. C. Alexander *	172.50
M. M. Wakefield	300.00
Class 7.—Bolts:	
George L. Neville	297.14

* Accepted. † Tie bid. ‡ Informal.

Proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 7.—Bolts—Continued.	
Albert L. Pitney	$335.82
J. H. Chesley & Co	249.84
Ira B. White	263.79
The Manhattan Supply Co	358.39
Brooklyn Hardware and Sporting Goods Co	261.47
W. T. & F. B. Weaver	260.66
F. P. May & Co	250.65
John T. Campbell & Son*	236.69
Frank E. Hopkins	260.53
Class 8.—Iron, etc.:	
George L. Neville	1,377.00
Jas. H. McGill	(†)
J. B. Kendall†	733.08
S. C. Forsaith Machine Co	1,224.48
The Manhattan Supply Co.*	1,091.00
Class 9.—Bricks:	
John Miller	4,693.50
Geo. L. Neville	7,509.60
Joseph D. Small	4,756.08
Frederick Brick Works	6,258.00
Walter F. Hewitt	(†)
J. B. Kendall	5,600.91
Barber & Ross*	4,450.92
Charles Ford	5,475.75
Class 10.—Piles:	
L. Ledman	980.00
Geo. L. Neville	2,240.00
Nathan B. Gaskill	1,960.00
J. S. Hoskins	1,512.00
L. A. Clarke	946.40
J. B. Kendall	1,288.00
National Supply and Investment Co	1,680.00
W. T. & F. B. Weaver	980.00
Barber & Ross	1,820.00
Thos. W. Smith	1,344.00
D. C. Alexander*	929.60
M. M. Wakefield	1,120.00
Class 11.—Yellow pine:	
George L. Neville	$2,242.29
Nathan B. Gaskill	2,339.30
Philip Walsh & Sons	2,147.29
National Supply and Investment Co	2,462.81
W. T. & F. B. Weaver	2,293.32
Church & Stephenson	2,099.19
Barber & Ross	2,486.21
Thomas W. Smith*	2,022.27
Class 12.—Lime, fire clay, cement, etc.:	
S. W. Niemeyer	344.50
John Miller†	154.00
George L. Neville	260.50
Brooklyn Fire Brick Works	(†)
Walter F. Hewitt	181.00
James H. McGill	181.10
J. A. Hayden	(†)
W. T. & F. B. Weaver	229.00
Clark Bros.*	174.10
Frank E. Hopkins	176.50
Class 13.—Fire brick:	
S. W. Niemeyer	1,082.72
John Miller	868.50
George L. Neville*	722.75
Brooklyn Fire Brick Works	1,085.62
Walter F. Hewitt	839.55
Union Mining Co	839.55
Jas. H. McGill	790.13
J. A. Hayden	810.60
J. B. Kendall	803.36
The Manhattan Supply Co	785.25
W. T. & F. B. Weaver	781.65
Clark Bros	810.60
Eugene L. Maxwell	1,171.61
Frank E. Hopkins	796.12
Class 14.—Life preserver:	
Hodgman Rubber Co.*	6,917.63

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated August 7, 1894; opened August 28, 1894.

Class 1.—Electrical supplies:	
Charles Cory & Son	$985.61
Western Electric Co.*	894.67
Ira B. White	1,148.15
International Trading and Electric Co	935.33
Class 2.—Annunciators:	
Charles Cory & Son*	1,164.05
Western Electric Co	1,252.00
Ira B. White	1,399.00
Class 3.—Water alarms:	
Charles Cory & Son	332.50
Western Electric Co.*	306.25
Ira B. White	420.00
Class 4.—Marine telephones:	
Western Electric Co.*	705.64
Class 5.—Wire:	
General Electric Co	572.55
Western Electric Co.*	509.00
Bishop Gutta Percha Co	581.00
Ira B. White	1,373.50
International Trading and Electric Co	790.50
Class 6.—Armature brushes, etc. (O. P. H.): †	
Class 7.—Ammeters, etc.:	
Western Electric Co.*	173.40
International Trading and Electric Co	184.90
Class 8.—Cable:	
General Electric Co.*	338.47
Western Electric Co	440.20
Bishop Gutta Percha Co	379.10
Ira B. White	418.70
International Trading and Electric Co	344.10
Class 9.—Screws:	
The Manhattan Supply Co	728.37
Western Electric Co	616.25
Francis Harral	590.25
Class 9.—Screws—Continued.	
J. H. Chesley & Co	$578.97
John H. Tissot, jr	585.71
Ira B. White	508.55
Geo. L. Neville*	524.50
John L. Howe	509.84
Brooklyn Hardware and Sporting Goods Co	544.42
Class 10.—Junction boxes:	
General Electric Co.*	363.73
Class 11.—Switches and receptacles: †	
Class 12.—Receptacles, etc.:	
General Electric Co.*	1,212.87
Class 13.—Keyless sockets:	
General Electric Co.*	594.00
Ira B. White	858.00
Class 14.—Lanterns, etc.:	
Western Electric Co	1,079.40
Page Bros. & Co.*	681.75
Ira B. White	784.25
Class 15.—Blowers and motors:	
General Electric Co.*	902.40
Class 16.—Hardware:	
The Manhattan Supply Co	1,773.36
Francis Harral*	1,683.36
John H. Tissot, jr	1,903.24
Ira B. White	2,065.35
John L. Howe	1,761.25
Class 17.—Drugs:	
The Manhattan Supply Co	108.38
Charles H. Pleasants	78.25
Shoemaker & Busch*	69.95
Class 18.—Yellow pine logs:	
Watson & Pittinger*	770.35
Fiske Bros	1,692.60
Geo. L. Neville	1,497.30
Class 19.—Deck plank:	
Watson & Pittinger*	1,361.25
Fiske Bros	2,925.00
Geo. L. Neville	2,610.00

* Accepted.

† Open purchase.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 20.—Lime, etc.:	
The Manhattan Supply Co	$130.00
Francis Harral*	71.00
Charles H. Pleasants	78.60
Class 21.—Twine:	
The Manhattan Supply Co	168.32
John P. Nawrath	183.20
John H. Tissot, jr	192.96
William Cathrall	172.32
Geo. L. Neville	193.60
Shoemaker & Busch*	155.24
Class 22.—Sheeting:	
The Manhattan Supply Co.*	3,385.10
Francis Harral	3,569.42
John H. Tissot, jr	3,478.29
Brooklyn Hardware and Sporting Goods Co	3,581.60
Class 23.—Kitchen utensils:	
V. Clad & Sons	1,254.73
The Manhattan Supply Co	1,232.96
Bramhall, Deane & Co	1,484.63
Francis Harral*	1,200.33
John H. Tissot, jr	1,552.84
Duparquet Huot Moneuse Co	1,356.47
Class 24.—Alcohol:	
Chas. H. Pleasants	35.60
Shoemaker & Busch*	32.86
Class 25.—Range, etc.:	
V. Clad & Sons*	250.00
Class 25.—Range, etc.—Continued.	
Bramhall, Deane & Co	$352.08
Duparquet Huot Moneuse Co	355.00
Class 26.—Carpets, etc.:†	
Hardenbergh & Co	1,327.60
J. Lichtenstein & Sons	(‡)
Class 27.—White lead:	
Clifford Pemberton*	3,787.50
Taylor Paint and Oil Co	3,800.00
John Lucas & Co	3,956.25
Geo. L. Neville	3,975.00
Shoemaker & Busch	3,930.00
Class 28.—Tallow:	
Clifford Pemberton*	70.00
Fiske Bros	79.80
Charles H. Pleasants	83.75
Class 29.—Varnish:	
Standard Varnish Works	1,212.00
Clifford Pemberton	1,335.00
Taylor Paint and Oil Co	1,177.00
Chicago Varnish Co	1,330.00
John Lucas & Co	993.00
Charles M. Childs & Co	1,125.00
Valentine & Co	1,250.00
Ira B. White	1,485.00
Brooklyn Hardware and Sporting Goods Co	1,665.00
Shoemaker & Busch*	951.00

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated August 25, 1894; opened September 11, 1894.

Class 1.—20,000 pounds tinned mutton:	
C. J. Caughey*	$1,950.00
L. H. Heymann	2,088.00
Class 2.—25,000 pounds tinned corned beef:	
Kemp, Day & Co	2,437.50
H. M. Anthony	2,487.50
L. H. Heymann*	2,185.00
Class 3.—35,000 pounds assorted vegetables:	
Kemp, Day & Co	1,823.50
Jno. J. O'Rorke	1,795.50
C. J. Caughey	2,299.50
Chas. E. Ahrens*	1,715.00
Class 4.—1 cutting-off machine:	
Manhattan Supply Co.*	620.00
Class 5.—1 screw-cutting engine lathe:	
Manhattan Supply Co.*	635.00
Class 6.—1 gibbed carriage engine lathe:	
Manhattan Supply Co.*	547.00
Class 7.—Electrical supplies:	
The Western Electric Co.*	342.37
Class 8.—Wire:	
The Western Electric Co.*	$76.50
E. S. Greeley & Co	78.50
Class 9.—Wood screws:	
The Brooklyn Hardware and Sporting Goods Co.*	17.79
E. S. Greeley & Co	22.65
Geo. L. Neville	22.76
Class 10.—White ash:	
Charles E. Pell	1,024.75
Watson & Pittinger*	980.00
George L. Neville	1,400.00
Class 11.—White pine:	
Charles E. Pell	915.00
Watson & Pittinger*	892.00
George L. Neville	1,500.00
Class 12.—White oak:	
Watson & Pittinger	1,455.00
Robt. R. Kloess	1,470.00
George L. Neville*	1,200.00

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated August 30, 1894; opened September 18, 1894.

Class 1.—Brick:	
John Miller*	$434.00
Frederick Brick Works	(‡)
Thos. W. Smith	458.80
Walter F. Hewitt	449.50
J. T. Campbell & Son	491.88
Chas. Ford	496.00
Class 2.—Lime, sand, etc.:	
John Miller	2,456.70
Patrick Malony	1,719.65
Walter F. Hewitt	1,736.42
Brandywine Granite Co	(‡)
James T. Sommers*	1,650.16
Geo. L. Neville	2,032.64
Clark Bros	2,051.34
W. T. & F. B. Weaver	2,505.93
Class 3.—Cement:	
John Miller	1,182.60
B. Wallis & Co	1,033.68
Walter F. Hewitt	858.48
J. T. Campbell & Son	871.62
Henry A. Jones	884.76
James H. McGill*	770.88
Class 4.—Nails:	
Ira B. White	$16.00
John Miller*	12.50
W. A. Pate	14.00
J. T. Campbell & Son	13.50
James B. Lamble	15.00
The Manhattan Supply Co	17.00
Thompson C. Gill & Co	22.20
Barber & Ross	15.50
Geo. L. Neville	25.00
Clark Bros	18.00
W. T. & F. B. Weaver	13.50
J. H. Chesley & Co	13.40
Brooklyn Hardware and Sporting Goods Co	15.00
Class 5.—Yellow pine:	
Nathan B. Gaskill	813.15
Thos. W. Smith	799.24
J. T. Campbell & Son	1,019.75
Barber & Ross	930.02
Geo. L. Neville	830.20
W. T. Galliher & Bro.*	794.20
W. T. & F. B. Weaver	947.75

* Accepted. † No award. ‡ Informal.

Proposals for supplies for the navy-yard Washington, D. C., etc.—Continued.

Class 5.—Yellow pine—Continued.	
Philip Walsh & Sons	$892.11
Class 6.—Gravel:	
John Miller	1,250.00
Patrick Malony	600.00
Walter F. Hewitt	650.00
James T. Sommers *†	600.00
Geo. L. Neville	750.00
Clark Bros	700.00
W. T. & F. B. Weaver	1,050.00
Class 7.—Locomotive crane:	
The Industrial Works*	6,690.00
Walter L. Clark	8,530.00
Yale & Towne Manufacturing Co	7,350.00
Class 8.—Bristles:	
John P. Nawrath*	962.50
Z. D. Gilman	1,515.00
J. T. Campbell & Son	1,392.50
James B. Lambie	2,112.25
The Manhattan Supply Co	2,215.00
W. T. & F. B. Weaver	1,5250.0
Class 9.—Thread:	
Ira B. White	13.35
Class 9.—Thread.—Continued.	
John P. Nawrath*	$11.10
J. T. Campbell & Son	16.50
James B. Lambie	14.65
The Manhattan Supply Co	24.00
Class 10.—Brushes:	
Ira B. White	26.80
W. A. Pate	27.44
J. T. Campbell & Son*	22.00
James B. Lambie	30.75
Geo. L. Neville	25.00
Nelms & Co	40.00
W. T. & F. B. Weaver	24.00
Brooklyn Hardware and Sporting Goods Co	28.00
Class 11.—Sand:	
J. W. Parson & Co.*	700.00
Geo. L. Neville	900.00
Class 12.—Rye straw:	
Thomas W. Smith	10.00
Walter F. Hewitt	7.50
J. T. Campbell & Son*	5.50
James B. Lambie	10.00

Proposals for the navy-yard, Boston, Mass., under Bureau advertisement dated September 1, 1894; opened September 18, 1894.

Class 1.—Sand, cement, etc.: (‡)	
Class 2.—Hardware:	
Bolles & Wilde*	$31.47
A. P. Swoyer & Co	36.31
Brooklyn Hardware and Sporting Goods Co	32.87
Class 3.—White zinc:	
James & Abbott	280.00
S. C. Forsaith Machine Co	268.50
J. O. Weatherbee*	264.00
Class 4.—Spruce, etc.:	
James & Abbott	440.00
S. C. Forsaith Machine Co	451.50
J. A. Weatherbee*	414.00
Class 5.—Sheet lead, etc.:	
Buerkel & Co	75.20
Gould & Cutler	71.20
Bolles & Wilde*	58.90
The Manhattan Supply Co	65.20
S. C. Forsaith Machine Co	66.58
A. P. Swoyer & Co	67.41
Thompson C. Gill & Co	69.95
Class 6.—Packing:	
Buerkel & Co	4.00
Wm. H. Gallison	5.00
Bolles & Wilde*	3.40
S. C. Forsaith Machine Co	3.60
A. P. Swoyer & Co	3.68
Class 7.—Pipe and pipe fittings:	
Buerkel & Co	189.00
Wm. H. Gallison	214.30
Class 7.—Pipe, etc.—Continued.	
Bolles & Wilde*	$169.22
The Manhattan Supply Co	170.06
S. C. Forsaith Machine Co	180.03
Brooklyn Hardware and Sporting Goods Co	186.12
A. P. Swoyer & Co	(§)
Class 8.—Paints:	
Gould & Cutler	11.15
Bolles & Wilde*	10.00
Charles M. Childs & Co	18.50
Shoemaker & Busch	10.45
Class 9.—Paints:	
Gould & Cutler	16.00
Bolles & Wilde	25.00
Smith, Kline & French Co	18.80
Charles M. Childs & Co	23.90
Shoemaker & Busch	20.75
Class 10.—Varnishes:	
Gould & Cutler	48.74
Charles M. Childs & Co	55.00
Shoemaker & Busch*	40.73
Class 11.—Alcohol:	
Cutler Bros. & Co.*	62.25
Shoemaker & Busch	64.88
Class 12.—White lead:	
Gould & Cutler	41.00
Bolles & Wilde	46.00
Smith, Kline & French Co.*	39.00
Chas. M. Childs & Co	48.00
Shoemaker & Busch	42.60

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated August 29, 1894, opened September 18, 1894.

Class 1.—Sand:	
John Miller	$400.00
E. C. Brooks Co	160.00
Nimmo & Stokes	150.00
Chas. S. Conner	185.00
S. W. Niemeyer	200.00
Geo. L. Neville	250.00
Sam'l P. Oast	175.00
Lindsay & Co.*	115.00
Class 2.—Portland cement:	
B. Wallis & Co	2,200.00
James Brand	2,250.00
National Building Supply Co	2,270.00
Wm. J. Donaldson & Co	2,290.00
John Miller	2,700.00
Atlas Cement Co.*	2,020.00
Henry A. Jones	2,430.00
E. Thiele	2,230.00
E. C. Brooks Co	2,480.00
Class 2.—Portland cement—Continued.	
Walter F. Hewitt	$2,500.00
Nimmo & Stokes	2,590.00
L. Meyerstein	2,330.00
Francis Harral	2,350.00
Wm. H. Collins	2,300.00
S. W. Niemeyer	2,500.00
Geo. L. Neville	2,185.00
Samuel P. Oast	2,600.00
Lindsay & Co	2,250.00
Class 3.—Piles:	
J. B. Sanford	2,318.40
H. E. Culpepper	2,402.40
E. B. Stevens*	2,016.00
Class 4.—Rivets, etc.:	
Thompson C. Gill & Co	55.10
Ira B. White	41.48
The Manhattan Supply Co	43.95
A. P. Swoyer & Co	62.18

* Accepted. † By lot. ‡ Open purchase. § Informal.

Proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

-Rivets, etc.—Continued.

L. Neville	$32 63
. Chesley & Co	64. 54
klyn Hardware and Sporting ods Co.*	30. 95
-Brushes:	
ago Wood Finishing Co	79. 80
3. White	62. 40
Manhattan Supply Co	98. 50
ns & Co	62. 25
'. Swoyer & Co	69. 00
L. Neville*	60. 00
maker & Busch	92. 25
klyn Hardware and Sporting ods Co	78. 75
-Cement, etc.:	
'. Niemeyer	66. 50
L. Neville*	57. 50
-Dry goods:	
Manhattan Supply Co	169. 85
ge L. Neville*	139. 80
P. Nawrath	146. 55
-Chairs:	
3. White*	66. 00
ge L. Neville	90. 00
-Glass:	
3. White*	12. 30
'. Swoyer & Co	12. 36
L. Neville	13. 86
—Hardware:	
3. White	281. 99
Manhattan Supply Co	499. 85
cis Harral	(†)
ge L. Neville*	281. 98
. Chesley & Co	375. 84
—Lamps, etc.:	
3. White	21. 10
. Porter's Sons	25. 97
Manhattan Supply Co.*	18. 00
ge L. Neville	21. 50
—Belting, etc.:	
Bros	335. 25
e Belting Co	346. 00
3. White	339. 50
Manhattan Supply Co.*	312. 00
er & Co	358. 00
ge L. Neville	340. 04
—Ash and juniper:	
les S. Conner*	658. 50
ge L. Neville	696. 00
—White pine:	
e & Smith	2, 483. 80
les S. Conner	2, 552. 00
ge L. Neville	2, 473. 00
an B. Gaskill	2, 286. 50
ip Walsh & Sons*	2, 028. 50
—Yellow pine, etc.:	
e & Smith	2, 120. 00
les S. Conner	2, 100. 00
ge L. Neville*	2, 000. 00
—Elm, mahogany, etc.:	
e & Smith	573. 00
les S. Conner	688. 00
ge L. Neville*	500. 00
—Juniper shores, etc.:	
les S. Conner	225. 00
ge L. Neville*	141. 00
an B. Gaskill	360. 00
—Tools:	
Forsaith Machine Co	435. 92
ne L. Maxwell	387. 22
adelphia Machinery and Supply	395. 23
3. White	418. 79
Manhattan Supply Co	399. 22

Class 18.—Tools—Continued.

Mayer & Co	$446. 83
Francis Harral	377. 63
John H. Tissot, jr	403. 67
George L. Neville	391. 94
J. H. Chesley & Co	449. 25
Brooklyn Hardware and Sporting Goods Co	371. 30
Class 19—Iron:	
Thompson C. Gill & Co	68. 00
Ira B. White	65. 00
Mayer & Co	66. 50
A. P. Swoyer & Co	77. 42
Geo. L. Neville*	59. 00
Brooklyn Hardware and Sporting Goods Co	75. 40
Class 20.—Metals:	
Ira B. White	448. 41
The Manhattan Supply Co.*	430. 62
Mayer & Co	478. 65
A. P. Swoyer & Co	487. 20
George L. Neville	435. 26
Brooklyn Hardware and Sporting Goods Co	467. 29
Class 21.—Steel:	
Thompson C. Gill & Co	54. 80
Ira B. White	58. 00
Mayer & Co	100. 00
J. H. Sternbergh*	50. 00
Geo. L. Neville	54. 85
Brooklyn Hardware and Sporting Goods Co	66. 00
Class 22.—Packing, etc.:	
Ira B. White	149. 50
The Manhattan Supply Co	138. 00
Mayer & Co.*	137. 50
George L. Neville	187. 50
Gutta-Percha and Rubber Manufacturing Co	145. 00
Class 23.—Tar and pitch:	
Mayer & Co.*	50. 40
S. W. Niemeyer	120. 12
George L. Neville	86. 52
Lindsay & Co	115. 50
Shoemaker & Busch	120. 75
Class 24.—Pipe and pipe fittings, etc.:	
Ira B. White	522. 30
The Manhattan Supply Co	654. 47
Mayer & Co.*	473. 53
Geo. L. Neville	524. 79
Class 25.—Brass pipe:	
American Tube Works	320. 00
The Manhattan Supply Co	320. 00
Mayer & Co.*	317. 50
A. P. Swoyer & Co	320. 00
Geo. L. Neville	320. 00
Class 26.—Oars:	
Ira B. White*	162. 75
The Manhattan Supply Co	174. 25
S. W. Niemeyer	210. 00
George L. Neville	169. 11
Brooklyn Hardware and Sporting Goods Co	175. 00
Class 27.—Tools:	
Philadelphia Machinery and Supply Co	249. 92
Ira B. White	288. 49
The Manhattan Supply Co	332. 97
Mayer & Co	306. 54
Francis Harral*	235. 60
John H. Tissot, jr	256. 09
George L. Neville	296. 05
J. H. Chesley & Co	257. 50
Brooklyn Hardware and Sporting Goods Co	239. 81

ils for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated August 28, 1894, opened September 25, 1894.

-Oak staves:

Walker*	$203. 00
Carman	224. 00
owell	220. 50
H. Leahy	210. 00
-Lumber:	
Walker	12, 478. 81

Class 2.—Lumber—Continued.

A. S. Carman	$12, 536. 12
A. Powell	13, 554. 82
Wm. H. Leahy*	11, 290. 41
Class 3.—Oars:	
C. C. Bruce*	153. 87
A. Powell	191. 42

* Accepted. † Informal. ‡ Open purchase.

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated September 13, 1894; opened October 2, 1894.

Class 1.—159,000 pounds cable iron:	
George L. Neville*	$6,312.30
Brown & Co	6,678.00

Proposals for supplies for the navy-yard, New York, under Bureau advertisement dated September 14, 1894; opened October 2, 1894.

Class 1.—Steel plates:	
Carbon Steel Co	$193.07
The Manhattan Supply Co	248.12
Park Bros. & Co	175.11
Wm. B. Broomall	202.05
Carnegie Steel Co., Limited*	157.15
Class 2.—Steel angles:	
Carbon Steel Co	178.90
The Manhattan Supply Co	294.09
Carnegie Steel Co., Limited*	145.61
Class 3.—T rails:	
The Manhattan Supply Co.*†	33.60
The S. C. Forsaith Machine Co	33.60
George L. Neville	56.00
Carnegie Steel Co., Limited	(‡)
Class 4.—Rivets:	
J. H. Sternbergh	38.96
A. P. Swoyer & Co	54.54
Geo. L. Neville	44.52
Brooklyn Hardware and Sporting Goods Co.*	38.95
John H. Tissot, jr	41.74
Class 5.—Bolts: §	
J. H. Sternbergh	9.03
A. P. Swoyer & Co	6.49
George L. Neville	9.48
Brooklyn Hardware and Sporting Goods Co	12.69
John H. Tissot, jr	15.80
Class 6.—Pipes, etc.:	
Edward F. Keating*	3.36
Edward Barr Co	6.52
Class 7.—Screws, etc.:	
J. H. Sternbergh	44.16
A. P. Swoyer & Co	50.88
The S. C. Forsaith Machine Co	53.39
George L. Neville	39.00
Brooklyn Hardware and Sporting Goods Co.*	34.63
John H. Tissot, jr	45.43
Class 8.—Brass wire:	
George L. Neville*	35.00
Class 9.—Cocks:	
A. P. Swoyer & Co	21.52
The S. C. Forsaith Machine Co	21.49
George L. Neville	20.75
Edward F. Keating*	18.25
Edward Barr Co	26.63
H. Belfield & Co	23.25
E. T. Tweedy	21.30
Class 9.—Cocks—Continued.	
Colwell Lead Co	$23.25
Morse Burtis	19.50
Henry McShane Manufacturing Co.	21.70
John H. Tissott, jr	26.50
Class 10.—Valves:	
A. P. Swoyer & Co	803.74
The S. C. Forsaith Machine Co	849.12
Kennedy Valve Manufacturing Co.	1,196.68
George L. Neville*	542.01
Eugene L. Maxwell	963.62
Pancoast & Rogers	853.77
Edward F. Keating	805.96
Edward Barr Co	719.11
The Fairbanks Co	1,222.30
H. Belfield & Co	1,019.10
E. T. Tweedy	761.19
Colwell Lead Co	742.95
Morse Burtis	801.48
Class 11.—Brass pipe:	
The Manhattan Supply Co	1,751.25
Ansonia Brass and Copper Co	1,751.25
A. P. Swoyer & Co	1,751.25
George L. Neville	1,751.25
American Tube Works	1,751.25
Edward F. Keating	1,751.75
Colwell Lead Co*	1,699.96
H. Belfield & Co	1,751.25
Class 12.—Pipe fittings:	
Ansonia Brass and Copper Co	1,607.91
The S. C. Forsaith Machine Co	1,634.21
George L. Neville*	858.14
Eugene L. Maxwell	1,233.51
Edward F. Keating	963.45
Edward Barr Co	878.65
H. Belfield & Co	1,196.10
E. T. Tweedy	975.04
Colwell Lead Co	954.52
Morse Burtis	1,004.98
Henry McShane Manufacturing Co.	1,389.72
Class 13.—Iron pipe:	
A. P. Swoyer & Co	188.25
The S. C. Forsaith Machine Co	192.97
George L. Neville	178.86
Eugene L. Maxwell	178.46
Pancoast & Rogers	158.34
Edward F. Keating*	158.12
Edward Barr Co	175.40
Colwell Lead Co	166.94
Henry McShane Manufacturing Co.	176.38

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated September 12, 1894; opened October 2, 1894.

Class 1.—2 slotting machines:	
The Niles Tool Works	$8,790.00
Bement, Miles & Co.*	7,920.00
Class 2.—4 horizontal boring and drilling machines:	
The Niles Tool Works	11,600.00
Geo. Place	11,160.00
Bement, Miles & Co.*	10,960.00
Class 3.—One 40-horsepower engine:	
The Manhattan Supply Co	895.00
The S. C. Forsaith Machine Co	755.00
The Niles Tool Works	650.00
George Place	839.00
Ellicott Machine Co.*	598.99
Armington & Sims	675.00
Class 4.—2 electric traveling cranes:	
Yale & Towne Manufacturing Co	11,584.00
The Morgan Engineering Co.*	9,572.00
Manning, Maxwell & Moore	10,985.00
The Industrial Works	20,300.00
Class 5.—3 vertical boring and turning mills:	
The Pond Machine Tool Co.*	$10,316.00
The Niles Tool Works	11,485.00
Bement, Miles & Co	11,450.00
Class 6.—Supports, etc., for electric cranes:	
The Morgan Engineering Co.*	8,745.00
The S. C. Forsaith Machine Co	9,514.44
Class 7.—4 planing machines: ‖	
Class 8.—2 portable drills, No. 4:	
The S. C. Forsaith Machine Co.*	575.00
Manning, Maxwell & Moore	577.00
Frank Clouds	576.18
Class 9.—2 horizontal boring, drilling, and milling machines:	
The Niles Tool Works	14,900.00
Bement, Miles & Co.*	13,920.00

*Accepted. † Tie bid. ‡ Informal. § No award. ‖ Readvertised.

Proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 10.—1 Universal radial drilling machine:	
The Niles Tool Works	$2,495.00
Bement, Miles & Co.*	2,450.00
Class 11.—2 shaping machines:	
Wm. H. Warren Machine Tool Works	4,900.00
The Niles Tool Works*	3,280.00
Bement, Miles & Co	3,400.00
Class 12—2 portable drills, No. 3:	
TheS. C. Forsaith Machine Co	459.00
Maning, Maxwell & Moore	457.00
Frnk Clouds*	453.96
Class8.—10 differential pulley hoists:	
Yale & Towne Manufacturing Co	178.50
The S. C. Forsaith Machine Co.*	155.00
Manning, Maxwell & Moore	174.50
George Place	412.50
Ellicott Machine Co	330.00
Frank Clouds	195.00
Maris & Beekly	270.00
John H. Tissot, jr	227.00
Class 14.—Shafting, etc.:	
The Manhattan Supply Co	2,570.70
Class 14.—Shafting, etc.—Continued.	
Williams & Hanks	$1,90[illegible].12
Wm. Sellers & Co. (inc.)	1,876.36
Portland Co	2,033.44
The Niles Tool Works	1,792.40
Geo. Place	1,878.15
Philadelphia Machinery and Supply Co	1,942.37
Ellicott Machine Co.*	1,304.90
Donegan & Swift	(†)
Class 15.—Steel rails:	
The S. C. Forsaith Machine Co*	270.30
Class 16.—Blower pipes:	
Adendroth & Root M'f'g Co*	1,345.58
Class 17.—Spool silk:	
W. D. Clark & Co.*	247.50
The Manhattan Supply Co	335.00
Marc M. Michael	270.00
John P. Nawrath	560.00
Class 18.—Hercules braid:	
W. D. Clark & Co.*	985.00
The Manhattan Supply Co	1,220.00
Marc M. Michael	1,435.00

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated September 22, 1894; opened October 9, 1894.

Class 1.—Nails:	
Ira B. White	$28.10
Thompson C. Gill & Co	36.42
Geo. L. Neville*	25.66
Class 2.—Lumber:	
Rich'd E. Briggs	1,016.99
Nathan B. Gaskill	1,294.40
Class 2.—Lumber—Continued.	
Philip Walsh & Sons	$1,290.40
Duke & Smith	942.10
Portsmouth Lumber Manufacturing Co.*	887.43
Geo. L. Neville	1,041.65

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated September 20, 1894; opened October 9, 1894.

Class 1.—10,000 pairs calfskin shoes:	
John A. Jacobs	$12,300.00
George F. Roedel*	12,100.00
The Manhattan Supply Co	13,490.00
Watsontown Boot and Shoe Co	12,475.00
Class 2.—10,000 boxes blacking:	
The Manhattan Supply Co.*	270.00
F. M. McWilliams	299.00
Ira B. White	330.00
Francis Harral	287.00
J. J. O'Rorke	312.00
Class 3.—50,000 pounds tinned brawn:	
Charles E. Ahrens	524.50
D. E. Boulton*	479.00
H. M. Anthony	575.00
Class 4.—50,000 pounds salt beef:	
C. J. Caughey*	3,170.00
Halstead & Co	3,225.55
Class 5.—20,000 pounds rice:	
C. J. Caughey*	1,034.00
Francis J. Dessoir	1,258.00
Charles E. Ahrens	1,040.00
J. J. O'Rorke	1,074.00
Class 6.—3,000 pounds raisins:	
C. J. Caughey	187.50
Francis J. Dessoir	187.20
Charles E. Ahrens	192.00
J. J. O'Rorke	173.10
Class 7.—2,500 pounds prunes:	
C. J. Caughey	375.00
Francis J. Dessoir	279.75
Charles E. Ahrens	247.50
J. J. O'Rorke*	219.25
Class 8.—5,000 pounds bacon:	
Halstead & Co.*	645.00
Class 9.—4,000 pounds tea:	
C. J. Caughey	998.80
Francis J. Dessoir	1,089.20
Charles E. Ahrens	956.00
John S. Sloan*	894.00
J. J. O'Rorke	894.80
Class 10.—Plated ware:	
Gorham Manufacturing Co	632.74
Wilcox Silver Plate Co.*	626.46
Class 11.—Glassware:	
James M. Shaw & Co.*	109.70
Class 12.—Chinaware:	
James M. Shaw & Co.*	$210.64
Class 13.—Nails and screws:	
F. M. McWilliams	23.55
Ira B. White	21.75
Francis Harral*	19.25
Class 14.—White pine:	
Charles E. Pell	1,837.50
Watson & Pittinger*	1,830.00
Class 15.—Electrical supplies:	
The Western Electric Co	773.89
General Fixture Co	686.05
Porter's Son & Co.*	682.46
Class 16.—Electrical supplies:	
The International Trading and Electric Co.*	625.50
Class 17.—Electrical supplies:	
The Western Electric Co	75.25
The Manhattan Supply Co	162.00
Francis Harral*	75.00
The Brooklyn Hardware and Sporting Goods Co	102.25
Class 18.—Electrical supplies:	
The Western Electric Co.*	458.00
Class 19.—Electrical supplies:	
The Western Electric Co.*	96.27
The International Trading and Electric Co	126.48
Class 20.—Electrical supplies:	
The Western Electric Co	737.00
General Electric Co	722.00
Bishop Gutta-Percha Co.*	584.00
Class 21.—Electrical supplies:	
The Western Electric Co	808.74
General Electric Co.*	689.39
Class 22.—Electrical supplies: ‡	
The Western Electric Co	199.20
General Electric Co	1,029.60
Class 23.—Electrical supplies:	
F. M. McWilliams	67.70
Ira B. White	62.71
Francis Harral	62.31
The Brooklyn Hardware and Sporting Goods Co.*	60.57

* Accepted. † Informal ‡ Open purchase.

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated September 19, 1894; opened October 16, 1894.

Class 1.—50,000 pounds, salt-water soap:	
Leon Gally	$2,125.00
Alta Soap Co	1,970.00
Otto Luhn & Co.*	1,710.00
Class 2.—3,000 pounds canned salmon:	
Getz Bros. & Co.*	262.50
Herman Levi	270.00
Jones & Co	280.00
Samuel Foster	327.00
Thomas H. Dowling	270.00
Samuel J. Wormser	307.50
Class 3.—25,000 pounds sugar:	
Herman Levi*	1,412.50
Class 3.—Sugar—Continued.	
Jones & Co	$1,520.00
Samuel Foster	1,487.50
Samuel J. Wormser	1,490.00
Class 4.—2,000 feet hose:	
S. C. Forsaith Machine Co	1,190.00
Boston Woven Hose and Rubber Co.	1,300.00
Eureka Fire Hose Co	1,600.00
John Arnett	1,300.00
Harry T. Lally	1,200.00
Bowers Rubber Co.*	1,160.00
W. T. Z. Schenck	2,000.00
Revere Rubber Co	1,400.00

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated October 1, 1894; opened October 16, 1894.

Class 1.—Planing machine:	
Powell Planing Co	$19,380.00
Detrick & Harvey Machine Co	22,500.00
Betts Machine Co.*	14,820.00
Niles Tool Works	16,700.00
Wm. Sellers & Co	16,520.00
Bement Miles & Co	16,800.00
Pond Machine Tool Co	22,736.00
Class 2.—Hardware:	
Francis Harral	77.23
The Manhattan Supply Co	90.79
F. P. May & Co	87.21
J. H. Chesley & Co	71.50
J. T. Campbell & Son	78.77
W. T. & F. B. Weaver	79.71
Brooklyn Hardware and Sporting Goods Co.*	69.73
Class 3.—Lumber:	
Philip Walsh & Sons	1,537.31
Nathan B. Gaskill*	1,249.57
Thos. W. Smith	1,345.05
Church & Stephenson	(†)
W. T. Galliher & Bro	1,352.07
Class 3.—Lumber—Continued.	
W. T. & F. B. Weaver	$1,263.84
Grayson & Cain	(†)
Class 4.—Alcohol:	
Smith, Kline & French Co.*	123.00
Shoemaker & Busch	129.75
Class 5.—Tools:	
Francis Harral	42.75
The Manhattan Supply Co	53.98
F. P. May & Co	45.68
Henry S. Manning	42.67
J. H. Chesley & Co	48.18
J. T. Campbell & Son	48.05
W. T. & F. B. Weaver	52.15
Brooklyn Hardware and Sporting Goods Co.*	41.45
Class 6.—Steel:	
Park Bros. & Co	555.75
The Manhattan Supply Co	650.50
Carpenter Steel Co	675.00
J. B. Kendall	369.00
Thompson C. Gill & Co.*	357.75

Proposals for stationery for the navy-yard, Portsmouth, N. H., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$145.45
Arthur Mountain & Co.*	127.45
Class 2:	
The Manhattan Supply Co	124.40
Arthur Mountain & Co.*	109.54
Class 3:	
The Manhattan Supply Co.*	62.40
Arthur Mountain & Co	81.45
Sam'l Ward Co	99.75
Class 4:	
The Manhattan Supply Co	38.54
Arthur Mountain & Co.*	17.95
Sam'l Ward Co	29.75
Class 5:	
The Manhattan Supply Co	70.13
Arthur Mountain & Co.*	52.91
Hume & Billisoly	57.64
Sam'l Ward Co	73.52
Class 6:	
The Manhattan Supply Co	23.82
Hume & Billisoly	23.83
Samuel Ward Co	22.78
J. W. Gibbs & Co.*	18.59
Class 7:	
The Manhattan Supply Co	155.84
Hume & Billisoly*	133.35
Sam'l Ward Co	185.38
Class 8:	
The Manhattan Supply Co	42.07
Class 8.—Continued.	
Arthur Mountain & Co.*	$40.80
Hume & Billisoly	41.39
Sam'l Ward Co	45.28
Class 9:	
The Manhattan Supply Co	105.31
Arthur Mountain & Co.*	96.60
Hume & Billisoly	105.13
Sam'l Ward Co	120.44
Class 10:	
The Manhattan Supply Co	76.07
Hume & Billisoly*	73.16
Sam'l Ward Co	75.99
Class 11:	
The Manhattan Supply Co.*	21.95
Hume & Billisoly	33.92
Sam'l Ward Co	23.89
Class 12:	
The Manhattan Supply Co	56.15
Hume & Billisoly*	48.54
Sam'l Ward Co	62.06
Class 13:	
The Manhattan Supply Co.*	64.55
Hume & Billisoly	67.98
Sam'l Ward Co	81.78
Class 14:	
The Manhattan Supply Co	153.56
Hume & Billisoly*	141.77
Sam'l Ward Co	171.07

* Accepted. † Informal.

Proposals for stationery for the navy-yard, Boston, Mass., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$158.50
Arthur Mountain & Co.*	142.98
Class 2:	
The Manhattan Supply Co	139.10
Arthur Mountain & Co.*	120.88
Class 3:	
The Manhattan Supply Co.*	56.80
Arthur Mountain & Co	71.48
Sam'l Ward Co	88.75
Class 4:	
The Manhattan Supply Co	93.95
Arthur Mountain & Co.*	45.82
Sam'l Ward Co	69.90
Class 5:	
The Manhattan Supply Co	147.25
Arthur Mountain & Co.*	97.59
Hume & Billisoly	108.42
Sam'l Ward Co	129.35
Class 6:	
The Manhattan Supply Co	26.01
Hume & Billisoly	28.38
Samuel Ward Co	29.93
J. W. Gibbs*	20.40
Class 7:	
The Mannattan Supply Co	129.20
Hume & Billisoly*	107.91
Sam'l Ward Co	152.00
Class 8:	
The Manhattan Supply Co	36.90
Class 8.—Continued:	
Arthur Mountain & Co.*	$35.69
Hume & Billisoly	36.44
Samuel Ward Co	38.94
Class 9:	
The Manhattan Supply Co	75.79
Arthur Mountain & Co.*	69.76
Hume & Billisoly	74.78
Samuel Ward Co	84.71
Class 10:	
The Manhattan Supply Co	58.07
Hume & Billisoly*	57.14
Samuel Ward Co	62.21
Class 11:	
The Manhattan Supply Co.*	60.48
Hume & Billisoly	83.72
Sam'l Ward Co	85.17
Class 12:	
The Manhattan Supply Co	14.15
Hume & Billisoly*	11.57
Samuel Ward Co	14.80
Class 13:	
The Manhattan Supply Co	60.80
Hume & Billisoly*	60.71
Samuel Ward Co	64.80
Class 14:	
The Manhattan Supply Co.*	131.70
Hume & Billisoly	132.06
Samuel Ward Co	149.30

Proposals for stationery for the naval station, Newport, R. I., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$161.46
Arthur Mountain & Co.*	147.20
Class 2:	
The Manhattan Supply Co	197.00
Arthur Mountain & Co.*	174.47
Class 3:	
The Manhattan Supply Co.*	34.20
Arthur Mountain & Co	39.47
Sam'l Ward Co	53.25
Class 4:	
The Manhattan Supply Co	134.75
Arthur Mountain & Co.*	62.52
Sam'l Ward Co	88.30
Class 5:	
The Manhattan Supply Co	94.40
Arthur Mountain & Co.*	74.02
Hume & Billisoly	81.30
Sam'l Ward Co	101.25
Class 6:	
The Manhattan Supply Co	14.57
Hume & Billisoly	14.39
Sam'l Ward Co	14.07
J. W. Gibbs*	10.35
Class 7:	
The Manhattan Supply Co	120.77
Hume & Billisoly*	92.19
Samuel Ward Co	134.85
Class 8:	
The Manhattan Supply Co	24.27
Class 8.—Continued.	
Arthur Mountain & Co.*	$23.31
Hume & Billisoly	24.12
Samuel Ward Co	25.52
Class 9:	
The Manhattan Supply Co	83.84
Arthur Mountain & Co.*	79.43
Hume & Billisoly	80.80
Samuel Ward Co	90.11
Class 10:	
The Manhattan Supply Co	71.92
Hume & Billisoly*	64.56
Samuel Ward Co	72.39
Class 11:	
The Manhattan Supply Co	21.80
Hume & Billisoly	33.47
Samuel Ward Co.*	17.83
Class 12:	
The Manhattan Supply Co	34.20
Hume & Billisoly*	27.70
Samuel Ward Co	35.40
Class 13:	
The Manhattan Supply Co	55.27
Hume & Billisoly*	46.81
Samuel Ward Co	52.16
Class 14:	
The Manhattan Supply Co	93.19
Hume & Billisoly*	87.15
Samuel Ward Co	106.02

Proposals for stationery for the New York Navy-Yard, under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co.*	$711.70
Arthur Mountain & Co	723.52
Class 2:	
The Manhattan Supply Co	1,483.50
Arthur Mountain & Co.*	1,429.45
Class 3:	
The Manhattan Supply Co.*	169.00
Arthur Mountain & Co	239.75
Class 4:	
The Manhattan Supply Co	754.45
Arthur Mountain & Co.*	491.35
Class 5:	
The Manhattan Supply Co	$942.62
Arthur Mountain & Co.*	808.60
Hume & Billisoly	919.34
Class 6:	
The Manhattan Supply Co	259.60
Arthur Mountain & Co	255.77
Hume & Billisoly	295.44
J. W. Gibbs*	202.50
Class 7:	
The Manhattan Supply Co	1,395.53

*Accepted.

Proposals for stationery for the New York Navy-Yard, etc.—Continued.

Class 7.—Continued.	
Arthur Mountain & Co.*	$1,186.31
Hume & Billisoly	1,207.21
Class 8:	
The Manhattan Supply Co	$254.90
Arthur Mountain & Co.*	247.83
Hume & Billisoly	249.00
Class 9:	
The Manhattan Supply Co	1,163.61
Arthur Mountain & Co.*	1,236.73
Hume & Billisoly	1,151.23
Class 10:	
The Manhattan Supply Co.*	630.90
Hume & Billisoly	659.11
Class 11:	
The Manhattan Supply Co.*	$232.15
Hume & Billisoly	342.59
Class 12:	
The Manhattan Supply Co	258.98
Hume & Billisoly*	220.04
Class 13:	
The Manhattan Supply Co.*	709.74
Hume & Billisoly	795.40
Class 14:	
The Manhattan Supply Co	1,430.02
Hume & Billisoly*	1,385.49

Proposals for stationery for the Naval Academy, Annapolis, Md., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$186.80
Arthur Mountain & Co.*	168.17
Class 2:	
The Manhattan Supply Co	223.90
Arthur Mountain & Co.*	203.73
Class 3:	
The Manhattan Supply Co.*	60.20
Arthur Mountain & Co	73.01
Class 4:	
The Manhattan Supply Co	155.91
Arthur Mountain & Co.*	74.07
Class 5:	
The Manhattan Supply Co	178.45
Arthur Mountain & Co.*	132.35
Hume & Billisoly	153.22
Class 6:	
The Manhattan Supply Co	23.67
Hume & Billisoly	24.77
J. W. Gibbs*	17.80
Class 7:	
The Manhattan Supply Co	175.30
R. C. Ballantyne	165.47
Hume & Billisoly*	141.05
Class 8:	
The Manhattan Supply Co	33.72
Arthur Mountain Co.*	31.95
Class 8.—Continued.	
R. C. Ballantyne	$32.08
Hume & Billisoly	33.58
Class 9:	
The Manhattan Supply Co	140.78
Arthur Mountain & Co	133.95
R. C. Ballantyne	134.13
Hume & Billisoly*	133.25
Class 10:	
The Manhattan Supply Co.*	96.58
R. C. Ballantyne	108.43
Hume & Billisoly	98.78
Class 11:	
The Manhattan Supply Co.*	45.77
R. C. Ballantyne	51.59
Hume & Billisoly	60.32
Class 12:	
The Manhattan Supply Co	124.90
R. C. Ballantyne	114.85
Hume & Billisoly*	92.17
Class 13:	
The Manhattan Supply Co	91.40
Hume & Billisoly*	76.82
Class 14:	
The Manhattan Supply Co	183.97
Hume & Billisoly*	172.24

Proposals for stationery for the navy-yard, Washington, D. C., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
Easton & Rupp	$519.35
The Manhattan Supply Co	532.85
Arthur Mountain & Co.*	494.31
Class 2:	
Easton & Rupp	731.65
The Manhattan Supply Co	712.15
Arthur Mountain & Co.*	649.18
R. C. Ballantyne	682.16
Class 3:	
Easton & Rupp	400.90
The Manhattan Supply Co.*	245.50
Arthur Mountain & Co	313.42
R. C. Ballantyne	481.50
Class 4:	
Easton & Rupp	236.50
The Manhattan Supply Co	326.35
Arthur Mountain & Co.*	163.63
R. C. Ballantyne	234.20
Class 5:	
Easton & Rupp	425.75
The Manhattan Supply Co	474.25
Arthur Mountain & Co.*	376.47
R. C. Ballantyne	468.30
Hume & Billisoly	412.90
Class 6:	
Easton & Rupp	98.65
The Manhattan Supply Co	101.20
R. C. Ballantyne	103.59
Hume & Billisoly	119.97
J. W. Gibbs*	80.10
Class 7:	
The Manhattan Supply Co	625.40
Arthur Mountain & Co.*	512.61
Class 7.—Continued.	
R. C. Ballantyne	$617.86
Hume & Billisoly	572.04
Class 8:	
The Manhattan Supply Co	185.40
Arthur Mountain & Co	181.33
R. C. Ballantyne*	179.29
Hume & Billisoly	183.01
Class 9:	
The Manhattan Supply Co	517.05
Arthur Mountain & Co.*	477.42
R. C. Ballantyne	477.83
Hume & Billisoly	516.37
Class 10:	
The Manhattan Supply Co.*	279.86
R. C. Ballantyne	287.56
Hume & Billisoly	288.70
Class 11:	
The Manhattan Supply Co.*	121.81
R. C. Ballantyne	133.97
Hume & Billisoly	161.26
Class 12:	
The Manhattan Supply Co	155.20
R. C Ballantyne	140.54
Hume & Billisoly*	137.37
Class 13:	
The Manhattan Supply Co	354.74
R. C. Ballantyne	336.62
Hume & Billisoly*	307.49
Class 14:	
The Manhattan Supply Co.*	436.03
R. C. Ballantyne	465.41
Hume & Billisoly	455.38

*Accepted.

Proposals for stationery for the navy-yard, Norfolk, Va., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$319.55
Arthur Mountain & Co.*	296.16
Class 2:	
The Manhattan Supply Co	698.10
Arthur Mountain & Co.*	635.48
Class 3:	
The Manhattan Supply Co.*	147.50
Arthur Mountain & Co	192.23
Class 4:	
The Manhattan Supply Co	320.46
Arthur Mountain & Co.*	155 96
Class 5:	
The Manhattan Supply Co	312.60
Arthur Mountain & Co.*	245.89
Hume & Billisoly	282.71
Class 6:	
The Manhattan Supply Co	89.54
Hume & Billisoly	105.10
J. W. Gibbs*	80.93
Class 7:	
The Manhattan Supply Co	536.58
Arthur Mountain & Co.*	426.18
Class 8:	
The Manhattan Supply Co	$83.56
Arthur Mountain & Co.*	82.03
Hume & Billisoly	83.76
Class 9:	
The Manhattan Supply Co.*	288.66
Arthur Mountain & Co	296.93
Hume & Billisoly	310.48
Class 10:	
The Manhattan Supply Co.*	195.15
Hume & Billisoly	203.02
Class 11:	
The Manhattan Supply Co.*	75.31
Hume & Billisoly	108.55
Class 12:	
The Manhattan Supply Co	77.30
Hume & Billisoly*	62.70
Class 13:	
The Manhattan Supply Co	174.76
Hume & Billisoly*	171.99
Class 14:	
The Manhattan Supply Co.*	451.09
Hume & Billisoly	453.67

Proposals for stationery for the navy-yard, Pensacola, Fla., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$29.65
Arthur Mountain & Co.*	25.07
Class 2:	
The Manhattan Supply Co	55.07
Arthur Mountain & Co.*	44.21
Class 3:	
The Manhattan Supply Co.*	29.56
Arthur Mountain & Co	31.95
Class 4:	
The Manhattan Supply Co	15.30
Arthur Mountain & Co.*	7.00
Class 5:	
The Manhattan Supply Co	41.10
Arthur Mountain & Co.*	25.49
Hume & Billisoly	31.02
Class 6:	
The Manhattan Supply Co	$53.20
Hume & Billisoly*	41.71
Class 7:	
The Manhattan Supply Co	11.05
Arthur Mountain & Co	9.94
Hume & Billisoly*	9.93
Class 8:	
The Manhattan Supply Co	20.02
Arthur Mountain & Co.*	16.10
Hume & Billisoly	18.13
Class 9:	
The Manhattan Supply Co.*	15.55
Hume & Billisoly	17.17
Class 10:	
The Manhattan Supply Co	40.65
Hume & Billisoly*	38.55

Proposals for stationery for the navy-yard, Mare Island, Cal., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
Cunningham, Curtiss & Welch	$391.80
Payot, Upham & Co.*	231.05
J. P. Le Count	359.55
The Manhattan Supply Co	329.20
Arthur Mountain & Co	270.44
Dutton & Partridge	360.30
Class 2:	
Cunningham, Curtiss & Welch	567.00
Payot, Upham & Co.*	391.60
J. P. Le Count	673.75
The Manhattan Supply Co	498.20
Arthur Mountain & Co	412.12
Dutton & Partridge	525.00
Class 3:	
Cunningham, Curtiss & Welch	206.00
Payot, Upham & Co	126.75
J. P. Le Count	325.00
The Manhattan Supply Co.*	125.00
Arthur Mountain & Co	130.55
Dutton & Partridge	300.50
Class 4:	
Scott & Bannon	572.70
Cunningham, Curtiss & Welch	651.84
Payot, Upham & Co.*	274.10
J. P. Le Count	468.26
The Manhattan Supply Co	619.85
Arthur Mountain & Co	286.15
Dutton & Partridge	591.16
Class 5:	
Cunningham, Curtiss & Welch	$340.20
Payot, Upham & Co	314.27
J. P. Le Count	286.10
The Manhattan Supply Co	420.80
Arthur Mountain & Co.*	271.18
Dutton & Partridge	402.45
Class 6:	
Scott & Bannon	114.39
Cunningham, Curtiss & Welch	86.25
Payot, Upham & Co	90.05
J. P. Le Count	127.05
The Manhattan Supply Co	113.06
Dutton & Partridge	135.22
J. W. Gibbs*	76.66
Class 7:	
Cunningham, Curtiss & Welch*	444.15
Payot, Upham & Co	588.20
J. P. Le Count	803.15
The Manhattan Supply Co	521.95
Dutton & Partridge	584.65
Class 8:	
Scott & Bannon	95.07
Cunningham, Curtiss & Welch	78.31
Payot, Upham & Co.*	71.22
J. P. Le Count	76.91
The Manhattan Supply Co	85.40
H. S. Crocker Co	73.84
Arthur Mountain & Co	74.94

*Accepted.

Proposals for stationery for the navy-yard, Mare Island, Cal., etc.—Continued.

Class 8.—Continued.	
Hume & Billisoly	$86.80
Dutton & Partridge	93.39
Class 9:	
Scott & Bannon	288.05
Cunningham, Curtiss & Welch	262.76
Payot, Upham & Co.*	215.31
J. P. Le Count	239.48
The Manhattan Supply Co	282.66
H. S. Crocker Co	253.45
Arthur Mountain & Co	231.16
Dutton & Partridge	273.42
Class 10:	
Scott & Bannon	203.87
Cunningham, Curtiss & Welch	169.32
Payot, Upham & Co.*	132.96
J. P. Le Count	178.45
The Manhattan Supply Co	144.16
H. S. Crocker Co	152.74
Dutton & Partridge	161.46
Class 11:	
Scott & Bannon	97.20
Cunningham, Curtiss & Welch	41.24
Payot, Upham & Co	52.75
J. P. Le Count	46.47
The Manhattan Supply Co	38.65
Class 11.—Continued.	
H. S. Crocker Co	$39.05
Dutton & Partridge*	37.78
Class 12:	
Scott & Bannon	77.65
Cunningham, Curtiss & Welch	76.20
Payot, Upham & Co	72.00
J. P. Le Count	90.45
The Manhattan Supply Co	67.55
H. S. Crocker Co.*	62.85
Dutton & Partridge	77.90
Class 13:	
Cunningham, Curtiss & Welch	221.32
Payot, Upham & Co	202.31
J. P. Le Count*	175.15
The Manhattan Supply Co	234.90
H. S. Crocker Co	211.65
Arthur Mountain & Co	180.20
Dutton & Partridge	251.45
Class 14:	
Cunningham, Curtiss & Welch	518.57
Payot, Upham & Co.*	443.95
J. P. Le Count	466.06
The Manhattan Supply Co	465.70
Dutton & Partridge	495.43

Proposals for stationery for the navy-yard, League Island, Pa., under Bureau advertisement dated September 15, 1894; opened October 16, 1894.

Class 1:	
The Manhattan Supply Co	$217.96
Arthur Mountain & Co.*	201.97
Class 2:	
The Manhattan Supply Co	255.10
Arthur Mountain & Co.*	226.08
Class 3:	
The Manhattan Supply Co.*	52.80
Arthur Mountain & Co	72.15
Class 4:	
The Manhattan Supply Co	185.10
Arthur Mountain & Co.*	90.86
Class 5:	
The Manhattan Supply Co	228.35
Arthur Mountain & Co.*	175.70
Hume & Billisoly	201.93
Class 6:	
The Manhattan Supply Co	32.74
Hume & Billisoly	36.92
J. W. Gibbs*	27.33
Class 7:	
The Manhattan Supply Co	305.55
Hume & Billisoly*	271.59
Class 8:	
The Manhattan Supply Co	$58.32
Arthur Mountain & Co.*	56.92
Hume & Billisoly	59.10
Class 9:	
The Manhattan Supply Co	218.25
Arthur Mountain & Co.*	197.94
Hume & Billisoly	217.95
Class 10:	
The Manhattan Supply Co.*	134.89
Hume & Billisoly	135.45
Class 11:	
The Mahattan Supply Co.*	50.77
Hume & Billisoly	69.83
Class 12:	
The Manhattan Supply Co	40.50
Hume & Billisoly*	27.04
Class 13:	
The Manhattan Supply Co	111.89
Hume & Billisoly*	91.87
Class 14:	
The Manhattan Supply Co	258.06
Hume & Billisoly*	234.48

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated October 5, 1894; opened October 23, 1894.

Class 1.—Pig iron:	
D. S. Cook	$1,335.00
S. C. Forsaith Machine Co	1,325.00
Thompson C. Gill & Co.*	1,099.00
The Manhattan Supply Co	1,290.00
Charles A. Moore	1,319.00
Class 2.—Safes:†	
John H. Tissot, jr	510.00
Remington & Sherman Co	745.00
S. C. Forsaith Machine Co	620.00
National Safe and Lock Co	777.00
The Manhattan Supply Co	560.00
Herring-Hall-Marvin Co	528.00
Ira B. White	526.00
Watson & Pittinger	552.40
Class 3.—Nuts:	
J. H. Sternbergh	816.18
Brooklyn Hardware and Sporting Goods Co.*	657.00
The Manhattan Supply Co	1,180.65
Class 4.—Brooms and brushes:	
John H. Tissot, jr	96.30
The Manhattan Supply Co	94.05
Ira B. White*	85.60
Class 5.—Sand:	
The Manhattan Supply Co	$574.00
Francis Harral*	528.50
Class 6.—Hardware:	
Brooklyn Hardware and Sporting Goods Co	411.41
Francis Harral*	382.68
Class 7.—Belting:	
Acme Belting Co	487.33
International Trading and Electric Co	(‡)
Brooklyn Hardware and Sporting Goods Co	$677.16
Loeb Bros	517.52
The Manhattan Supply Co.*	456.45
Class 8.—White pine:	
W. R. Adams*	778.75
Charles E. Pell	852.50
Watson & Pittinger	835.75
Class 9.—Poplar:	
W. R. Adams	1,365.00
Charles E. Pell*	1,245.00
Watson & Pittinger	1,364.00

* Accepted. † No award. ‡ Informal.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 10.—White pine:	
W. R. Adams*	$350.00
Charles E. Pell	485.00
Watson & Pittinger	396.00
Class 11.—Alcohol:	
Shoemaker & Busch*	2,497.50
Ross & Keany	2,687.50
Class 12.—Polishing paste:	
John H. Tissot, jr	182.50
International Trading and Electric Co	(†)
Alex H. Doty	169.00
Class 12.—Polishing paste—Continued.	
The Manhattan Supply Co	$154.00
Charles H. Pleasants*	87.40
Class 13.—White zinc: ‡	
John Lucas & Co	1,190.00
Langman & Martine	1,273.00
Shoemaker & Busch	1,190.00
Charles M. Childs & Co	1,190.00
Class 14.—Linseed oil:	
The Manhattan Supply Co	3,340.00
Charles M. Childs & Co.*	3,220.00

Proposals for supplies for the navy-yard, League Island, Pa., under Bureau advertisement dated October 6, 1894; opened October 23, 1894.

Class 1.—Cement:	
Commercial Wood and Cement Co	$1,095.00
P. H. Fairlamb & Son	1,240.00
Morris Ebert	1,325.00
Atlas Cement Co.*	970.00
Walter T. Bradley Co	(‡)
Class 2: §	
Class 3.—Piles:	
Nathan B. Gaskill*	360.36
Class 4.—Lumber:	
Elias Pohl	357.85
Nathan B. Gaskill*	288.60
Class 5.—Belts:	
Philadelphia Machinery and Supply Co.*	27.75
Loeb Bros	32.45
A. P. Swoyer & Co	29.73
Class 6.—Tool chests:	
Ira B. White*	53.64
Class 7.—Blocks:	
Francis Harral*	154.51
A. P. Swoyer & Co	158.86
John H. Tissot, jr	236.05
The Manhattan Supply Co	218.00
Class 8.—Bolts, etc.:	
Ira B. White*	489.51
Class 9.—Brooms and brushes:	
Nelms & Co	539.44
Francis Harral	346.97
Ira B. White	443.04
A. P. Swoyer & Co.*	344.90
Shoemaker & Busch	429.72
Charles J. Field	373.83
The Manhattan Supply Co	445.00
Class 10.—Bricks:	
Ira B. White	29.50
Thompson C. Gill & Co.*	14.04
The Manhattan Supply Co	23.50
Class 11.—Canvas:	
Ira B. White	83.30
Philadelphia Machinery and Supply Co	61.15
Thompson C. Gill & Co	83.65
A. P. Swoyer & Co.*	45.98
The Manhattan Supply Co	88.05
Class 12.—Door mats:	
Francis Harral	152.20
Ira B. White	160.00
A. P. Swoyer & Co.*	121.42
The Manhattan Supply Co	244.70
Class 13.—Hardware:	
Francis Harral*	480.84
Ira B. White	602.75
A. P. Swoyer & Co	652.01
Charles J. Field	572.65
Class 14.—Drawing materials:	
Francis Harral*	611.01
Class 14.—Drawing materials—Cont'd.	
Hume & Billisoly	$690.53
The Manhattan Supply Co	765.14
Class 15.—Lamps, etc.:	
Ira B. White	2,147.15
E. Hazard Aikman	2,133.14
Wm. Porter's Sons*	2,078.90
Porter's Son & Co	2,107.63
Williamson & Cassidy	(‡)
Class 16.—Tools:	
Francis Harral	1,369.71
Philadelphia Machinery and Supply Co.*	1,355.04
McFadden Co	1,458.33
Charles J. Field	1,598.45
Class 17.—Metals:	
Francis Harral	329.35
Thompson C. Gill & Co.*	284.84
A. P. Swoyer & Co	380.72
Charles J. Field	378.67
Colwell Lead Co	981.61
The Manhattan Supply Co	447.67
Class 18.—Packing:	
Francis Harral	811.18
Ira B. White	1,192.70
Philadelphia Machinery and Supply Co	888.48
A. P. Swoyer & Co.*	678.25
W. H. Sayen	1,094.45
Boston Woven Hose and Rubber Co.	879.45
Class 19.—Pipe and fittings:	
E. T. Tweedy	755.71
A. P. Swoyer & Co	809.74
Charles J. Field	843.31
Colwell Lead Co.*	579.50
The Manhattan Supply Co	857.15
Class 20.—Gaskets:	
Francis Harral	246.77
Ira B. White	426.00
Philadelphia Machinery and Supply Co.*	230.25
A. P. Swoyer & Co	281.73
W. H. Sayen	393.80
Boston Woven Hose and Rubber Co.	230.53
Class 21.—Stationery:	
Hume & Billisoly	133.78
The Manhattan Supply Co.*	119.69
Class 22.—Tools:	
Francis Harral*	2,732.70
McFadden Co	2,892.51
John H. Tissot, jr	3,292.28
Charles J. Field	3,010.37
Class 23.—Beeswax, soap, etc.:	
Ira B. White	171.75
Shoemaker & Busch*	81.65
The Manhattan Supply Co	189.75

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated October 4, 1894; opened October 30, 1894.

Class 1.—Spikes:	
Miller, Sloss & Scott	$705.00
J. S. Van Winkle & Co	693.75
Dunham, Carrigan & Hayden Co	615.25
Thompson C. Gill & Co.*	576.95
Class 2.—Railroad ties:	
Abraham Powell*	$886.84
Wm. Walker	1,101.12
Wm. H. Leahy	1,071.36
A. S. Carman	946.36

* Accepted. † Informal. ‡ No award § Open purchase.

Proposals for supplies for the navy-yard, Mare Island, Cal., etc.—Continued.

Class 3.—Steel rails:	
S. C. Forsaith Machine Co	$4,160.00
Miller, Sloss & Scott	2,716.80
Carnegie Steel Co., Limited	(†)
J. S. Van Winkle & Co.*	2,560.00
Dunham, Carrigan & Hayden Co	2,928.00
Thompson C. Gill & Co	3,136.00
Class 4.—Shingles:	
Abraham Powell	20.00
William Walker	27.50
W. H. Leahy	22.50
J. S. Van Winkle & Co.*	19.00
A. S. Carman	19.80
Class 5.—Sand:	
Abraham Powell*	123.56
Boston Woven Hose and Rubber Co.	128.30
A. S. Carman	132.20
Class 6.—Brick:	
Abraham Powell	99.53
Wm. Walker*	96.20
A. S. Carman	103.60
Class 7.—Hardware:	
Miller, Sloss & Scott	735.76
F. W. Wright*	591.36
Dunham, Carrigan & Hayden Co	635.07
Francis Harral	629.72
Class 8.—Lumber:	
Abraham Powell	340.15
Wm. Walker	398.08
Wm. H. Leahy	398.77
A. S. Carman*	331.84
Class 9.—Rivets:	
Miller, Sloss & Scott	43.26
J. H. Sternbergh	45.25
J. S. Van Winkle & Co.*	38.14
Dunham, Carrigan & Hayden Co	41.05
Thompson C. Gill & Co	42.20
Class 10.—Bar iron:	
Miller, Sloss & Scott	603.37
J. S. Van Winkle & Co.*	480.57
Dunham, Carrigan & Hayden Co	501.89
Thompson C. Gill & Co	656.60
Class 11.—Metals:	
Miller, Sloss & Scott	1,995.62
Holbrook, Merrill & Stetson*	1,923.41
Dunham, Carrigan & Hayden Co	1,932.50
Class 12.—Steel L's:	
S. C. Forsaith Machine Co	428.79
Miller, Sloss & Scott	434.70
J. S. Van Winkle & Co.* ‡	384.43
Dunham, Carrigan & Hayden Co	384.44
Thompson C. Gill & Co	405.13
Class 13.—Pipe and fittings:	
S. C. Forsaith Machine Co	449.38
Miller, Sloss & Scott	463.05
L. M. Kellogg	436.41
H. L. Lally	378.67
Holbrook, Merrill & Stetson	399.58
Dunham, Carrigan & Hayden Co.*	369.85
Class 14.—Bushings:	
Miller, Sloss & Scott	40.08
T. W. Wright	40.30
Class 14.—Bushings—Continued.	
Dunham, Carrigan & Hayden Co.*	$36.90
Samuel F. Weeks, jr	67.68
Class 15.—Hardware:	
Miller, Sloss & Scott	194.42
Dunham, Carrigan & Hayden Co.*	116.68
Class 16.—Sand and cement:	
Abraham Powell*	164.00
Wm. Walker	195.00
A. S. Carman	165.00
Class 17.—Dry goods: §	
Miller, Sloss & Scott	377.50
Class 18.—Leather, etc.: §	
Milton H. Cook	410.50
Loeb Bros	367.18
H. T. Lally	304.78
Class 19.—Teak, etc.:	
Abraham Powell	5,426.00
William Walker	6,097.50
Wm. H. Leahy	5,775.00
A. S. Carman*	5,110.25
Class 20—Tools:	
S. C. Forsaith Machine Co	280.16
Francis Harral*	221.63
Class 21.—Steel, mild:	
Miller, Sloss & Scott	99.60
J. S. Van Winkle & Co.*	84.00
Dunham, Carrigan & Hayden Co	92.00
Class 22.—Tool steel:	
Miller, Sloss & Scott	350.25
Park Bro. & Co	262.80
J. S. Van Winkle & Co	352.00
Dunham, Carrigan & Hayden Co	308.00
Thompson C. Gill & Co.*	208.49
Class 23.—Pig iron:	
Miller, Sloss & Scott*	1,095.00
J. S. Van Winkle & Co	1,125.00
Thompson C. Gill & Co	1,600.00
Class 24.—Copper:	
Miller, Sloss & Scott	1,299.50
Holbrook, Merrill & Stetson	1,315.00
Selby Smelting and Lead Co.*	1,250.00
Dunham, Carrigan & Hayden Co	1,375.00
Class 25.—Hose and packing:	
Bowers Rubber Co	613.15
H. T. Lally*	582.70
Boston Woven Hose and Rubber Co.	662.85
Class 26.—Oars:	
Miller, Sloss & Scott	323.30
Abraham Powell	178.20
Sam'l F. Weeks, jr.*	128.60
Class 27.—Tools:	
Miller, Sloss & Scott	208.75
F. W. Wright	234.45
Dunham, Carrigan & Hayden Co.*	138.75
Francis Harral	144.75
Class 28.—Steel rivet rods:	
Miller, Sloss & Scott	197.63
J. H. Sternbergh*	160.00
J. S. Van Winkle & Co	171.00
Thompson C. Gill & Co	425.00

Proposals for supplies for the navy-yard, New York, under Bureau advertisement date October 20, 1894; opened November 10, 1894.

Class 1.—Brushes:	
John H. Tissot, jr	$1,377.90
James Langmuir	1,124.41
Francis Harral*	958.80
Ira B. White†	1,420.80
Brooklyn Hardware and Sporting Goods Co	1,181.53
John P. Nawrath	1,313.52
Nelms & Co	1,019.40
F. M. McWilliams	1,530.15
Rubber and Celluloid Harness and Trimming Co	1,846.24
Manhattan Supply Co	1,428.00
Class 2.—Hardware:	
John H. Tissot, jr	405.49
Ira B. White*	387.20
Francis Harral	456.76
Class 2—Hardware—Continued.	
Brooklyn Hardware and Sporting Goods Co	$455.18
James Reilley Repair and Supply Co	432.09
Manhattan Supply Co	406.08
Class 3.—Pad locks:	
John H. Tissot, jr	270.00
Ira B. White	261.60
Brooklyn Hardware and Sporting Goods Co	262.80
James Reilley Repair and Supply Co	362.88
George L. Neville*	168.00
F. M. McWilliams	280.08
Class 4.—Lamp wick: ‖	
John H. Tissot, jr	27.00
Shoemaker & Busch	20.63
Ira B. White	29.70

* Accepted. † Informal. ‡ Tie bid. § Open purchase. ‖ No award.

Proposals for supplies for the navy-yard, New York, etc.—Continued.

Class 4.—Lamp wick—Continued.	
Francis Harral	$18.75
James Reilley Repair and Supply Co	14.06
John P. Nawrath	27.00
F. M. McWilliams	25.12
Manhattan Supply Co	26.85
Class 5.—Belting:	
John H. Tissot, jr	365.32
Loeb Bros	234.95
William Bowles	(*)
Imperial Rubber Co	299.80
James Reilley Repair and Supply Co	(*)
George L. Neville	284.10
Acme Belting Co	238.70
Graton & Knight Manufacturing Co.†	230.40
F. M. McWilliams	402.50
Manhattan Supply Co	236.80
Class 6.—White pine:	
East River Mill and Lumber Co	1,000.00
Watson & Pittinger†	720.00
Charles E. Pell	825.00
George L. Neville	1,750.00
Class 7.—Poplar:	
East River Mill and Lumber Co	400.00
Watson & Pittinger	350.00
Charles E. Pell†	284.50
Class 8.—Solder:	
Colwell Lead Co	51.88
Shoemaker & Busch†	51.20
E. F. Keating	55.00
Ira B. White	67.35
Brooklyn Hardware and Sporting Goods Co	56.25
James Reilley Repair and Supply Co	55.00
George L. Neville	80.00
Smith, Kline & French Co	51.25
F. M. McWilliams	62.50
Manhattan Supply Co	62.00
Class 9.—Paints:	
Shoemaker & Busch	1,741.25
A. L. Phillips†	1,354.08
James Langmuir	1,742.00
Charles M. Childs & Co	1,587.35
Smith, Kline & French Co	1,628.25
Taylor Paint and Oil Co	1,663.75
John Lucas & Co	1,867.10
Class 10.—White lead:	
Shoemaker & Busch	2,620.00
Frank E. Clark†	2,512.50
James Langmuir	2,572.50
Ira B. White	2,620.00
Langman & Martinez	2,583.00
George L. Neville	2,540.00
Smith, Kline & French Co	2,625.00
Wetherill & Bro	2,737.50
Taylor Paint and Oil Co	2,572.50
F. M. McWilliams	3,012.50
John Lucas & Co	2,630.00
Class 11.—Brown zinc:	
Shoemaker & Busch	349.50
A. L. Phillips	275.00
Frank E. Clark	262.50
James Langmuir	255.00
Charles M. Childs & Co	245.00
Geo. L. Neville	250.00
Smith, Kline & French Co.†	225.00
Taylor Paint and Oil Co.†‡	225.00
F. M. McWilliams	250.00
Jno. Lucas & Co	290.00
Class 12.—Varnishes, etc.:	
Shoemaker & Busch	2,183.00
A. L. Phillips	2,286.25
Brooklyn Varnish Manufacturing Co	2,588.00
James Langmuir	2,533.00
Ira B. White	3,072.00
Lawson, Valentine & Co	(*)
Charles M. Childs & Co	2,271.00
Smith, Kline & French Co.†	2,175.00
Taylor Paint and Oil Co	2,285.00
Class 12.—Varnishes, etc.—Continued.	
F. M. McWilliams	$2,661.00
Jno. Lucas & Co	2,540.00
Standard Varnish Works	2,410.00
Class 13.—Mineral sperm oil:	
William Bowles†	70.00
Fiske Bros	85.00
Swan & Finch Co	75.00
Langman & Martinez	100.00
Class 14.—Brass pipe:	
Colwell Lead Co	661.74
Bridgeport Brass Co	660.00
E. F. Keating	682.99
S. C. Forsaith Machine Co	713.89
A. P. Swoyer & Co	660.00
Geo. L. Neville	660.00
Merchant & Co., (inc.)	660.00
American Tube Works†‡	660.00
Manhattan Supply Co	660.00
Class 15.—Pipe and fittings:	
Colwell Lead Co	401.51
Henry McShane Manufacturing Co.	485.93
E. F. Keating†	351.11
E. T. Tweedy	356.18
S. C. Forsaith Machine Co	426.94
Geo. L. Neville	355.85
Manhattan Supply Co	404.13
Class 16.—Files:	
Colwell Lead Co	194.12
J. Barton Smith Co.†	142.71
Ira B. White	169.38
Francis Harral	163.33
Brooklyn Hardware and Sporting Goods Co	145.93
James Reilley Repairing and Supply Co	150.20
Geo. L. Neville	203.35
J. H. Chesley & Co	149.64
Manhattan Supply Co	160.48
Class 17.—Tools:	
Ira B. White	1,254.70
Francis Harral	1,095.03
Brooklyn Hardware and Sporting Goods Co	1,169.75
Manhattan Supply Co.†	980.04
Class 18.—Beeswax:	
Shoemaker & Busch†	110.00
William Bowles	140.00
Fiske Bros	140.00
S. C. Forsaith Machine Co	129.60
Langman & Martinez	160.00
Charles M. Childs & Co	152.00
Smith, Kline & French Co	126.00
F. M. McWilliams	148.00
Manhattan Supply Co	152.00
Class 19.—Soap:	
John H. Tissot, jr	104.00
Shoemaker & Busch†	83.88
Fiske Bros	132.40
F. M. McWilliams	136.00
Manhattan Supply Co	130.00
Class 20.—White zinc:	
Shoemaker & Busch	1,198.00
Frank E. Clark	1,150.00
James Langmuir	1,110.00
Langman & Martinez	1,180.00
Charles M. Childs & Co	1,150.00
Smith, Kline & French Co	1,100.00
Taylor Paint and Oil Co.†	970.00
F. M. McWilliams	1,290.00
John Lucas & Co	1,175.00
Class 21.—Overcoat cloth:	
B. Y. Pippey & Co	11,216.67
Blackinton Co.†	11,187.50
Wendell, Fay & Co	11,599.50
Manhattan Supply Co	11,244.50
Class 22.—Carpets:	
John P. Nawrath	1,859.51
Hardenburgh & Co	2,062.03
Lord & Taylor†	1,762.00

*Informal. † Accepted. ‡ Tie bid.

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated October 18, 1894, opened November 10, 1894.

Class 1.—Building bricks:	
Bayne & Davis	$6,930.00
Washington Brick and Terra Cotta Co.*	5,273.10
Samuel P. Oast	6,930.00
E. C. Brooks & Co	5,638.50
Class 2.—Skewback bricks:	
Bayne & Davis	192.00
Washington Brick and Terra Cotta Co	468.00
Samuel P. Oast	240.00
E. C. Brooks & Co.*	178.80
S. W. Niemeyer	360.00
Class 3.—Paving bricks:	
Milliken Brothers	1,300.00
Washington Brick and Terra Cotta Co.*	950.00
Samuel P. Oast	1,500.00
Linden & Co	1,200.00
E. C. Brooks & Co	995.00
S. W. Niemeyer	1,500.00
Jno. O. Gamage	1,800.00
Class 4.—Lime:	
Henry A. Jones & Co	880.00
Washington Brick and Terra Cotta Co	1,500.00
Samuel P. Oast* †	880.00
Nimmo & Stokes	980.00
George L. Neville	1,400.00
Linden & Co	900.00
E. C. Brooks & Co	890.00
S. W. Niemeyer	920.00
John O. Gamage	880.00
Class 5.—Cement (Portland):	
Atlas Cement Co.*	1,010.00
Arthur C. Babson	(‡)
Samuel P. Oast	1,300.00
Nimmo & Stokes	1,250.00
George L. Neville	1,100.00
Linden & Co	1,125.00
E. C. Brooks & Co	1,240.00
S. W. Niemeyer	1,250.00
John O. Gamage	1,098.75
Class 6.—Cement (Rosendale):	
Samuel P. Oast	1,725.00
Nimmo & Stokes	1,950.00
Geo. L. Neville*	1,485.00
Linden & Co	1,575.00
E. C. Brooks & Co	1,800.00
S. W. Niemeyer	2,250.00
Wm. N. Beech	(‡)
Jno. O. Gamage	1,646.25
Class 7.—Gravel:	
Washington Brick and Terra Cotta Co	550.00
Nimmo & Stokes	812.50
James Symington*	547.00
Duke & Smith	925.00
George L. Neville	550.00
S. W. Niemeyer	682.50
Class 8.—Granite:	
Brandywine Granite Co	1,000.00
Washington Brick and Terra Cotta Co	1,400.00
Samuel P. Oast	1,240.00
James Symington*	876.00
Duke & Smith	1,096.00
Geo. L. Neville	1,078.00
Linden & Co	1,100.00
Thompson C. Gill & Co	1,396.00
Class 9.—Sand:	
Washington Brick and Terra Cotta Co	2,400.00
Samuel P. Oast	1,000.00
Nimmo & Stokes	1,300.00
George L. Neville	3,200.00
Linden & Co	1,160.00
E. C. Brooks & Co	1,600.00
Chas. S. Connor*	776.00
S. W. Niemeyer	1,400.00
Class 10.—Window sills, etc.:	
Brandywine Granite Co	1,415.00
James Symington	1,558.80
Class 10.—Window sills, etc.—Cont'd.	
Duke & Smith*	$1,072.90
Winnsboro Granite Co	1,563.80
Manhattan Supply Co	2,772.28
Class 11.—Hardware:	
Ira B. White	92.85
George L. Neville*	90.45
Manhattan Supply Co	96.85
Thompson C. Gill & Co	98.88
Class 12.—Iron:	
S. C. Forsaith Machine Co	621.14
Ira B. White	645.24
N. B. Handy & Co.*	563.65
George L. Neville	647.48
Manhattan Supply Co	853.77
Thompson C. Gill & Co	733.83
Class 13.—White pine:	
Portsmouth Lumber Manufacturing Co	300.00
Philip Walsh & Sons	270.00
Duke & Smith*	240.00
Geo. L. Neville	300.00
Class 14.—Yellow pine:	
Portsmouth Lumber Manufacturing Co	1,578.50
Philip Walsh & Sons	1,614.20
Duke & Smith*	1,363.00
George L. Neville	1,841.60
Arthur Emerson	1,663.70
Class 15.—Steel building material:	
Milliken Bros	12,699.85
S. C. Forsaith Machine Co	14,115.09
Ira B. White	15,007.37
Phœnix Iron Co	14,843.98
Brown-Ketcham Iron Works*	12,452.67
Fred. J. Myers Manufacturing Co	13,455.96
Youngstown Bridge Co	14,803.20
Frederick W. Wood	13,901.89
Carnegie Steel Co., Limited	(‡)
Manhattan Supply Co	14,510.11
Thompson C. Gill & Co	14,271.16
Class 16.—Metals:	
S. C. Forsaith Machine Co	1,846.22
Ira B. White	1,664.20
N. B. Handy & Co.*	1,558.40
George L. Neville	1,660.70
Youngstown Bridge Co	1,638.25
Manhattan Supply Co	2,073.20
Thompson C. Gill & Co	1,574.39
Class 17.—Plumbers' supplies:	
Ira B. White	3,479.00
Joseph McCambridge*	2,772.47
J. L. Mott Iron Works	(‡)
Class 18.—Pipe and fittings:	
Tyler & Moler	210.34
Ira B. White	207.00
Joseph McCambridge*	152.18
George L. Neville	216.04
Manhattan Supply Co	191.63
Class 19.—Cocks, etc.:	
Ira B. White	204.36
Joseph McCambridge	225.50
Geo. L. Neville*	296.22
Manhattan Supply Co	228.03
Class 20.—Iron pipe:	
Tyler & Moler	615.76
Ira B. White	580.50
Joseph McCambridge*	448.60
Geo. L. Neville	562.98
Manhattan Supply Co	547.75
Class 21.—Glazed ware pipe:	
Ira B. White	97.25
Samuel P. Oast	77.90
Geo. L. Neville*	75.33
Manhattan Supply Co	99.68
Class 22.—Paints:	
Charles M. Childs & Co.*	1,135.11
Smith, Kline & French Co	1,147.45
Lawson Valentine Co	(‡)
Ira B. White	1,225.54
John Lucas & Co	1,244.64
Shoemaker & Busch	1,201.47

*Accepted. † Tie bid. ‡ Informal.

Proposals for supplies for the navy-yard, Norfolk, Va., etc.—Continued.

Class 23.—Alcohol:	
Smith, Kline & French Co.*	$498.00
Shoemaker & Busch	498.50
Class 24.—Red lead:	
Smith, Kline & French Co	900.00
Frank E. Clark	920.00
Ira B. White	919.00
F. M. McWilliams	985.00
N. B. Handy & Co	1,150.00
Geo. L. Neville * †	900.00
Jno. Lucas & Co	1,050.00
Wetherill & Bro	1,075.00
Shoemaker & Busch	1,148.00
Class 25.—White lead:	
Smith, Kline & French Co	1,545.00
Frank E. Clark *	1,507.50
Ira B. White	1,543.50
F. M McWilliams	1,537.50
N. B. Handy & Co	1,650.00
Geo. L. Neville	1,524.00
John Lucas & Co	1,575.00
Wetherill & Bro	1,612.50
Shoemaker & Busch	1,572.00
Class 26.—Zinc:	
Charles M. Childs & Co	615.00
Smith, Kline & French Co	572.50
Frank E. Clark	601.25
Ira B. White	580.50
F. M. McWilliams	642.50
N. B. Handy & Co	580.00
Geo. L. Neville *	569.00
Jno. Lucas & Co	619.00
Shoemaker & Busch	633.75
Class 27.—Varnishes, etc.:	
Charles M. Childs & Co	956.25
Smith, Kline & French Co.*	911.00
Lawson Valentine Co	(‡)
Ira B. White	1,240.00
F. M. McWilliams	1,195.50
Standard Varnish Works	1,039.00
George L. Neville	1,515.00
Jno. Lucas & Co	1,114.00
Shoemaker & Busch	939.80
Class 28.—Turpentine:	
Charles M. Childs & Co.*	197.50
Class 28.—Turpentine—Continued.	
Smith, Kline & French Co	$225.00
Ira B. White	207.50
Geo. L. Neville	225.00
Shoemaker & Busch	275.00
Class 29.—Tallow, etc.:	
Ira B. White	190.00
Fiske Bros	155.00
Geo. L. Neville	225.00
Wm. Bowles	150.00
Mayer & Co.*	145.00
Class 30.—Corn brooms:	
Ira B. White	101.52
F. M. McWilliams	102.00
George L. Neville	88.80
E. C. Brooks & Co	144.00
Manhattan Supply Co.	81.60
Shoemaker & Busch	131.76
Class 31.—Leather:	
Ira B. White	39.00
Geo. L. Neville	45.00
Wm. Bowles	57.00
Manhattan Supply Co.* †	39.00
Class 32.—Slab zinc:	
S. C. Forsaith Machine Co	197.00
Ira B. White	448.50
N. B. Handy & Co	400.00
George L. Neville	193.25
Merchant & Co. (inc.)	412.50
James Clendennin*	187.00
Mayer & Co	475.00
Class 33.—Cotton waste:	
S. C. Forsaith Machine Co	318.00
Ira B. White	371.25
Fiske Bros	332.50
F. M. McWilliams	347.50
Frank E. Hopkins	350.00
George L. Neville	400.00
Wm. Bowles	487.50
John P. Nawrath*	310.00
Manhattan Supply Co	336.50
Mayer & Co	462.50
Thompson C Gill & Co	349.50
Shoemaker & Busch	362.00

Proposals for the Mare Island Navy-Yard, under Bureau advertisement dated October 13, 1894; opened November 10, 1894.

Class 1.—Nuts:	
F. W. Wright	$157.85
Dunham, Carrigan & Hayden Co.*	69.53
Miller, Sloss & Scott	150.45
Class 2.—Brushes:	
Charles M. Yates	805.64
W. P. Fuller & Co	735.95
Nelms & Co.*	633.90
Francis Harral	661.66
Miller, Sloss & Scott	782.61
Class 3.—Cotton canvas:	
Murphy, Grant & Co	979.35
W. M. Cathroll	916.75
F. M. McWilliams	978.40
John H. Tissot, jr.*	858.50
Class 4.—Fire brick: §	
A. S. Carmen	38.40
Miller, Sloss & Scott	49.50
Thompson C. Gill & Co	270.00
Class 5.—Dry goods:	
F. W. Wright	67.50
Francis Harral*	56.26
Miller, Sloss & Scott	92.50
Class 6.—Screws:	
F. W. Wright*	316.20
Francis Harral	328.13
Dunham, Carrigan & Hayden Co	373.89
Miller, Sloss & Scott	336.25
Class 7.—Leather, etc.:	
Charles C. Nichols	64.60
F. W. Wright	87.60
B. T. Lacy*	63.50
Miller, Sloss & Scott	81.90
Class 8.—Lamp wick:	
Charles M. Yates	$66.00
F. W. Wright	52.50
Francis Harral*	40.50
Dunham, Carrigan & Hayden Co	50.85
F. M. McWilliams	63.00
Miller, Sloss & Scott	63.00
Class 9.—Lumber:	
A. S. Carmen	600.00
Wm. H. Leahy*	517.50
Wm. Walker	547.50
Class 10.—Metals:	
Holbrook, Merrill & Stetson*	2,851.12
A. A. Watkins	(‡)
S. C. Forsaith Machine Co	2,870.29
Dunham, Carrigan & Hayden Co	2,941.84
Miller, Sloss & Scott	2,959.45
Class 11.—Bar iron:	
Dunham, Carrigan & Hayden Co	524.71
J. S. Van Winkle*	387.82
Miller, Sloss & Scott	799.37
A. P. Swoyer & Co	410.85
Thompson C. Gill & Co	636.16
Class 12.—Bar steel:	
Dunham, Carrigan & Hayden Co	657.70
J. S. Van Winkle	420.22
Miller, Sloss & Scott	767.40
Carpenter Steel Co	436.40
Park Bro. & Co., Limited	390.04
Thompson C. Gill & Co.*	367.62
Class 13.—Sheet iron:	
Holbrook, Merrill & Stetson*	394.80
A. A. Watkins	408.01

* Accepted. † Tie bid. ‡ Informal. § No award.

Proposals for the Mare Island Navy-Yard, etc.—Continued.

Class 13.—Sheet iron—Continued.	
S. C. Forsaith Machine Co	$499.99
Miller, Sloss & Scott	469.62
Thompson C. Gill & Co	461.84
Class 14.—Hose, etc.:	
Boston Woven Hose and Rubber Co.	2,106.48
John Arnet	2,112.30
H. T. Lally	2,461.15
Bowers Rubber Co	(*)
Francis Harral	1,920.63
Dunham, Carrigan & Hayden Co.†	1,833.86
B. T. Lacy	2,711.47
Revere Rubber Co	2,582.57
Class 15.—Paints:	
Charles M. Yates	779.09
W. P. Fuller & Co.†	775.67
Charles M. Childs & Co	963.12
John Lucas & Co	988.45
Class 16.—Alcohol:	
Charles M. Yates	1,320.00
W. P. Fuller & Co	1,325.00
Mack & Co.‡	1,250.00
Class 17.—Red lead:	
Chas. M. Yates †‡	262.50
W. P. Fuller & Co	262.50
W. S. Miller	275.00
Class 18.—White lead:	
Charles M. Yates	525.00
W. P. Fuller & Co.†‡	525.00
W. S. Miller	550.00
John Lucas & Co	612.50
Class 19.—Zinc:	
Charles M. Yates †	280.00
W. P. Fuller & Co	298.75
Charles M. Childs & Co	387.50
John Lucas & Co	382.50
Class 20.—Varnishes, etc.:	
Charles M. Yates	466.75
Lawson Valentine Co	(*)
W. P. Fuller & Co.†	420.00
Chas. M. Childs & Co	524.50
Henry Burner	636.25
John Lucas & Co	596.40
Class 21.—Turpentine:	
Charles M. Yates	235.00
W. P. Fuller & Co	235.00
Chas. M. Childs & Co	445.00
W. S. Miller †	232.50
Class 22.—Tallow:	
Charles M. Yates	47.50
W. P. Fuller & Co. ‡	32.50
Class 23.—Linseed oil:	
Charles M. Yates	1,330.00
Charles M. Childs & Co	1,630.00
W. S. Miller †	1,270.00
Class 24.—Lubricating oil:	
Charles M. Yates	$1,475.00
Standard Oil Co	1,245.00
W. P. Fuller & Co.†	800.00
New York Lubricating Oil Co	2,250.00
J. N. Knowles	1,600.00
Fiske Bros	1,385.00
Class 25.—Lard oil:	
Wadhams Oil and Grease Co	3,400.00
Charles M. Yates † ‡	3,200.00
W. P. Fuller & Co	3,200.00
New York Lubricating Oil Co	3,950.00
J. N. Knowles	3,500.00
Class 26.—Cylinder oil:	
Wadhams Oil and Grease Co	280.00
Chas. M. Yates	250.00
Standard Oil Co. †	234.00
W. P. Fuller & Co	245.00
New York Lubricating Oil Co	400.00
J. N. Knowles	250.00
Fiske Bros	310.00
Class 27.—Mineral oil:	
Charles M. Yates	113.00
W. P. Fuller & Co	120.00
Mack & Co. †	90.00
Class 28.—Pipe and fittings:	
Holbrook, Merrill & Stetson	791.20
A. A. Watkins	668.65
H. T. Lally	880.46
L. M. Kellogg	764.00
S. C. Forsaith Machine Co	808.19
Dunham, Carrigan & Hayden Co. †	611.80
Miller, Sloss & Scott	1,119.45
Class 29.—Tools:	
F. W. Wright	233.00
Francis Harral †	126.00
Dunham, Carrigan & Hayden Co	180.75
Miller, Sloss & Scott	240.95
Class 30.—Soap:	
F. W. Wright	48.75
W. P. Fuller & Co.†	25.00
F. M. McWilliams	60.00
Class 31.—Waste:	
Wadhams Oil and Grease Co	412.50
Charles M. Yates	400.00
H. T. Lally	400.00
W. P. Fuller & Co	300.00
S. C. Forsaith Machine Co	400.00
Dunham, Carrigan & Hayden Co	422.50
B. T. Lacy	500.00
F. M. McWilliams	487.50
Miller, Sloss & Scott	430.00
Thompson C. Gill & Co	412.50
Fiske Bros. †	390.00

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated November 1, 1894; opened November 20, 1894.

Class 1.—Corn brooms:	
John H. Tissot, jr †	$155.00
Manhattan Supply Co	195.00
F. M. McWilliams	186.00
Brooklyn Hardware and Sporting Goods Co	180.00
Class 2.—Cheese cloth:	
John H. Tissot, jr	20.00
Manhattan Supply Co. †	13.50
J. P. Nawrath	15.00
Chas. C. Hayes	21.25
F. M. McWilliams	20.00
Class 3.—Hardware:	
John H. Tissot, jr	366.54
Francis Harral	345.08
Manhattan Supply Co. †	221.16
Brooklyn Hardware and Sporting Goods Co	223.58
Class 4.—Lamp wick:	
John H. Tissot, jr	82.50
Francis Harral	57.50
Jas. Reilley Repair and Supply Co. †	43.75
J. P. Nawrath	78.75
F. M. McWilliams	80.00
Class 5.—White ash:	
Chas. E. Pell †	$1,658.75
Watson & Pittinger	1,782.00
Class 6.—White pine:	
N. R. Adams	1,622.00
Chas. E. Pell	1,530.00
Watson & Pittinger †	1,511.00
Class 7.—Yellow pine:	
Chas. E. Pell	300.00
Watson & Pittinger †	278.00
Class 8.—Mahogany:	
William E. Uppegrove & Bro	700.00
Chas. E. Pell †	648.00
Watson & Pittinger	700.00
Class 9.—Bar iron:	
Thompson C. Gill & Co	55.82
Manhattan Supply Co. †	50.40
Class 10.—Packing:	
Manhattan Supply Co. †	4,108.00
Boston Woven Hose and Rubber Co.	4,213.00
Class 11.—Paints:	
A. L. Phillips †	150.20
John Lucas & Co	356.40

* Informal. † Accepted. ‡ Tie bid.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 11.—Paints—Continued.	
Chas. M. Childs & Co	$201.34
James Langmuir	220.70
Class 12.—Lubricating grease:	
John H. Tissot, jr	102.50
Jas. Reilley Repair and Supply Co	110.00
Manhattan Supply Co	144.00
Fiske Bros.*	99.00
Adam Cook's Sons	120.00
Class 13.—Tools:	
John H. Tissot, jr	513.58
Francis Harral	493.41
Jas. Reilley Repair and Supply Co.*	476.37
Manhattan Supply Co	530.20
Brooklyn Hardware and Sporting Goods Co	541.55
Class 14.—Cotton waste:	
John H. Tissot, jr	1,750.00
Francis Harral	1,645.00
Jas. Reilley Repair and Supply Co.*	1,487.50
Manhattan Supply Co	1,515.00
S. C. Forsaith Machine Co	1,593.04
J. P. Nawrath	1,490.00
Fiske Bros	1,497.50
H. R. Davis	1,593.74
F. M. McWilliams	1,525.00
Warner Ells	1,575.00
Class 15.—Sponges:	
John H. Tissot, jr	90.00
Manhattan Supply Co	54.50
J. P. Nawrath	114.00
F. M. McWilliams	45.00
Brooklyn Hardware and Sporting Goods Co.*	39.00
Class 16.—Enameled cloth:	
John H. Tissot, jr	1,045.00
Francis Harral	1,137.50
Jas. Reilley Repair and Supply Co	1,137.50
Manhattan Supply Co.*	995.00
Berg & Lineberger	1,080.00
J. P. Nawrath	1,109.00
Chas. C. Hayes	1,112.50
H. R. Davis	1,068.75
F. M. McWilliams	1,050.00
Class 17.—Burlaps:	
John H. Tissot, jr	343.00
Francis Harral	304.50
Manhattan Supply Co	329.00
Class 17.—Burlaps—Continued.	
Berg & Lineberger	$332.50
J. P. Nawrath	297.50
Charles C. Hayes*	288.75
H. R. Davis	301.00
F. M. McWilliams	294.00
Class 18.—Candles:	
S. C. Forsaith Machine Co	2,280.00
Peter Comstock	2,400.00
Brooklyn Hardware and Sporting Goods Co.*	2,075.00
Class 19.—Jackknives:	
Nathaniel L. Moore	1,110.00
John H. Tissot, jr	1,200.00
Jas. Reilley Repair and Supply Co	1,125.00
Manhattan Supply Co	1,140.00
W. F. Rockwell*	990.00
Class 20.—Eagle buttons:	
Wm. H. Horstmann & Co	195.00
John H. Tissot, jr	200.00
Jas. Reilley Repair and Supply Co	198.33
Manhattan Supply Co	230.00
Berg & Lineberger*	192.50
Wm. W. Foulkrod	200.00
Class 21.—Lanyards:	
Wm. H. Horstmann & Co.*	322.50
Edward Eicke	465.00
John H. Tissot, jr	550.00
Manhattan Supply Co	540.00
Berg & Lineberger	500.00
Class 22.—Hardware:	
Jno. H. Tissot, jr	400.56
Francis Harral	430.68
Jas. Reilley Repair and Supply Co.*	379.62
Manhattan Supply Co	410.68
Class 23.—Reroofing building, etc.:	
Timothy W. Dorsett*	1,539.00
Jas. Reilley Repair and Supply Co	2,625.00
Class 24.—Safes:	
The Bowles Safe and Lock Co	1,487.00
M. Moseley*	900.00
National Safe and Lock Co	1,147.40
John H. Tissot, jr	1,605.00
Manhattan Supply Co	1,605.00
S. C. Forsaith Machine Co	1,134.00
Herring-Hall-Marvin Co	1,640.00
Walter L. Clark	1,265.00
J. S. Lawrence & Co	1,122.50

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated November 24, 1894; opened December 11, 1894.

Class 1.—5,000 woolen jerseys:	
Brooklyn Hardware and Sporting Goods Co	$8,550.00
George Bannister	9,250.00
Wm. W. Foulkrod	8,945.00
F. M. McWilliams	11,350.00
The Manhattan Supply Co	10,835.00
Samuel Barron	9,925.00
H. R. Davis*	8,275.00
Wm. H. Horstmann Co	9,250.00
Charles T. Kellett	8,875.00
Class 2.—5,000 pounds corn meal:	
Charles E. Ahrens	150.00
F. M. McWilliams	185.00
The Manhattan Supply Co.*	140.00
C. J. Caughey	150.00
Jno. J. O'Rorke	148.50
Class 3.—5,000 pounds oatmeal:	
Charles E. Ahrens	200.00
F. M. McWilliams	205.00
Class 3.—Oatmeal—Continued.	
The Manhattan Supply Co	$195.00
C. J. Caughey	200.00
Jno. J. O'Rorke*	194.50
Class 4.—100,000 salt pork:	
Figge Bros.*	6,990.00
F. M. McWilliams	8,333.33
C. J. Caughey	7,490.00
Halstead & Co	7,450.00
Class 5.—100,000 pounds sugar:	
Charles E. Ahrens	4,200.00
The Manhattan Supply Co.*	4,000.00
C. J. Caughey	4,430.00
John J. O'Rorke	4,060.00
Class 6.—1,500 pounds dried peaches:	
Chas. E. Ahrens*	135.00
The Manhattan Supply Co	244.50
C. J. Caughey	195.00
Jno. J. O'Rorke	172.05

Proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated November 27, 1894; opened December 27, 1894.

Class 1.—Steel plates:	
Dunham, Carrigan & Hayden Co*	$2,876.10
Miller, Sloss & Scott	3,177.98
Carnegie Steel Co. (Limited)	3,018.81
Class 2.—Steel angles:	
Dunham, Carrigan & Hayden Co	3,462.39
Miller, Sloss & Scott	3,570.18
Carnegie Steel Co.* (Limited)	3,154.80
Class 3.—Bar iron:	
Dunham, Carrigan & Hayden Co	$1,285.92
Miller, Sloss & Scott	1,387.44
J. S. Van Winkle & Co.*	1,252.08
Class 4.—Norway iron:	
Dunham, Carrigan & Hayden Co	251.46
Miller, Sloss & Scott	247.17
J. S. Van Winkle & Co.*	230.34

* Accepted.

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated December 12, 1894; opened January 3, 1895.

Class 1.—120,000 pounds salt water soap:	
The Manhattan Supply Co	$4,318.80
Frank Morgan*	4,318.20
Class 2.—Door locks:	
John H. Tissot, jr	195.00
Brooklyn Hardware and Sporting Goods Co.*	183.00
J. H. Chesley & Co	186.50
Class 3.—5,000 woolen jerseys:	
H. R. Davis	8,475.00
Brooklyn Hardware and Sporting Goods Co	8,499.50
The Manhattan Supply Co	10,700.00
Class 3.—5,000 woolen jerseys—Cont'd.	
Wm. H. Horstmann & Co	$8,050.00
Samuel Barron*	7,487.50
Wm. W. Foulkrod	7,873.50
Charles T. Kellett	8,475.00
Class 4.—Lard oil:	
Fiske Bros	17,950.00
The Manhattan Oil Co.*	17,725.00
Class 5.—Linseed oil:	
Charles M. Childs & Co	3,810.00
Fiske Bros	3,705.00
Reginald P. Rowe*	3,690.00
The Manhattan Oil Co	3,930.00

Proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated December 8, 1894; opened January 8, 1895.

Class 1.—10,000 pounds candles:†	
S. C. Forsaith Machine Co	$1,325.00
Class 2.—2,000 pounds tea:	
Samuel J. Wormser	660.00
Pacific Marine Supply Co	580.00
Thos. H. Dowling*	430.00
Class 3.—8,000 pounds rice:	
Samuel J. Wormser	400.00
Herman Levi*	378.00
Pacific Marine Supply Co	380.00
Thomas H. Dowling	388.00
Class 4.—2,000 pounds dried apples:	
Samuel J. Wormser	175.00
Herman Levi*	115.50
Pacific Marine Supply Co	126.00
Class 5.—1,500 pounds dried peaches:	
Samuel J. Wormser	157.50
Herman Levi*	105.00
Pacific Marine Supply Co	127.50
Class 6.—1,000 pounds dried prunes:	
Samuel J. Wormser	107.50
Herman Levi*	60.75
Pacific Marine Supply Co	63.00
Class 7.—1,000 pounds dried raisins:	
Samuel J. Wormser	75.00
Herman Levi*	39.50
Pacific Marine Supply Co	40.00
Class 8.—1,500 gallons beans:	
Samuel J. Wormser	393.75
Herman Levi*	369.00
Pacific Marine Supply Co	375.00
Class 8.—1,500 gallons beans—Cont'd.	
Thos. H. Dowling	$380.00
Class 9.—Hardware:	
Dunham, Carrigan & Hayden Co.*	292.50
Francis Harral	312.68
F. N. Wright	268.78
Miller, Sloss & Scott	236.80
Class 10.—Glass:	
F. N. Woods*	119.37
F. N. Rosenbaum & Co	182.40
Miller, Sloss & Scott	197.25
Class 11.—Wire cloth:	
Miller, Sloss & Scott*	54.45
Class 12.—Lumber:	
Wm. Walker	1,683.50
Abraham Powell	1,787.50
A. S. Carman*	1,676.50
Class 13.—Steel plate:	
Dunham, Carrigan & Hayden Co.*	3,694.00
Miller, Sloss & Scott	3,843.00
Class 14.—Steel angles:	
Dunham, Carrigan & Hayden Co.*	1,196.00
J. S. Van Winkle & Co	1,794.00
Miller, Sloss & Scott	1,552.20
Class 15.—Rivet rods:	
Dunham, Carrigan & Hayden Co.*	250.00
Park, Bro. & Co	300.00
J. H. Sternbergh	390.00
J. S. Van Winkle & Co	334.00
Miller, Sloss & Scott	374.00

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated December 26, 1894; opened January 15, 1895.

Class 1.—Brushes, etc.:	
Michael Cavanagh	$1,583.60
J. A. Montgomery	1,679.05
James Langmuir	1,416.66
Rubber and Celluloid Harness Trimming Co	(‡)
Francis Harral	1,947.93
T. Peck & Co	(‡)
The Manhattan Supply Co	1,918.66
John H. Tissot, jr	1,785.44
Nelms & Co.*	1,221.28
Class 2.—Brushes, paint:	
Michael Cavanagh	756.00
J. A. Montgomery	764.40
James Langmuir*	365.40
Francis Harral	883.80
Rubber and Celluloid Harness Trimming Co	745.20
The Manhattan Supply Co	792.00
John H. Tissot, jr	853.80
Nelms & Co	378.00
Class 3.—Glass:	
James Reilley Repair and Supply Co.	173.98
Charles H. Pleasants	185.00
The Manhattan Supply Co.*	165.44
Ira B. White	226.22
John Lucas & Co	181.04
Class 4.—Hasps:	
The Manhattan Supply Co.*	51.20
Ira B. White	88.00
Class 5.—Padlocks:	
James Reilley Repair and Supply Co	$274.56
Brooklyn Hardware and Sporting Goods Co	258.00
Roner & Co.*	144.00
J. A. Montgomery	270.00
Ira B. White	261.36
Geo. L. Neville	288.00
John H. Tissot, jr	264.00
Class 6.—Lamp wick:	
James Reilley Repair and Supply Co	140.00
J. A. Montgomery	165.00
Francis Harral*	105.00
J. P. Nawrath	149.00
The Manhattan Supply Co	164.00
Ira B. White	168.70
Geo. L. Neville	200.00
Class 7.—Paints:	
Shoemaker & Busch	2,821.24
James Langmuir	2,586.44
Geo. W. Betts	2,992.01
The Electoral Polish Manufacturing Co	(‡)
Ira B. White	2,782.32
John Lucas & Co	2,686.61
Smith, Kline & French Co	2,699.36
Charles M. Childs & Co.*	2,563.24
E. A. Wadhams	(‡)

*Accepted. † No award. ‡ Informal.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 8.—Alcohol:	
Shoemaker & Busch*	$2,477.50
Smith, Kline & French Co	2,600.00
Class 9.—Red lead:	
Shoemaker & Busch	2,620.00
J. A. Montgomery	2,750.00
Wetherill & Bro	2,450.00
James Langmuir	2,450.00
Fiske Bros	2,370.00
Frank E. Clark*	2,325.00
Ira B. White	2,374.00
John Lucas & Co	2,450.00
Smith, Kline & French Co	2,450.00
R. P. Rowe	2,450.00
Class 10.—White lead:	
Shoemaker & Busch	5,240.00
J. A. Montgomery	5,625.00
Wetherill & Bro	5,025.00
James Langmuir	5,145.00
Fiske Bros	4,975.00
Frank E. Clark*†	4,975.00
Ira B. White	5,240.00
John Lucas & Co	5,147.50
Smith, Kline & French Co	5,145.00
R. P. Rowe	5,142.50
Class 11.—Zinc:	
Shoemaker & Busch	6,365.00
James Langmuir	6,037.50
Geo. W. Betts	7,120.00
Frank E. Clark	6,500.00
John Lucas & Co.*	5,625.00
Smith, Kline & French Co	6,325.00
Chas. M. Childs & Co	6,100.00
Class 12.—Varnishes:	
Shoemaker & Busch	1,958.00
Queens County Varnish Works	2,171.00
Lawson Valentine Co	2,566.00
Langman & Martins	1,996.00
J. A. Montgomery	2,011.00
Davis & Co	2,465.00
Standard Varnish Works	1,805.00
James Langmuir	2,216.00
Geo. W. Betts	2,005.00
Ira B. White	2,185.00
John Lucas & Co	2,175.00
John H. Tissot, jr	2,115.00
Smith, Kline & French Co	1,857.50
Chas. M. Childs & Co.*	1,722.00
Class 13.—Turpentine:	
Chas. H. Pleasants*	760.00
J. A. Montgomery	765.00
Ira B. White	846.00
Geo. L. Neville	800.00
Chas. M. Childs & Co	1,000.00
Class 14.—Grease and tallow:	
D. E. Boulton	(‡)
Fiske Bros.*	230.00
New York Lubricating Oil Co	(‡)
Class 15.—Cylinder oil:	
Swan & Finch Co.*	724.50
Fiske Bros	797.00
Morse Burtis	1,345.00
Borne, Scrymser & Co	1,700.00
E. A. Wadhams	787.50
Class 16.—Lubricating oil:	
The Manhattan Oil Co	1,750.00
Swan & Finch Co	749.50
Fiske Bros	990.00
Borne, Scrymser & Co	1,450.00
New York Lubricating Oil Co	1,150.00
Platt & Washburn Refining Co	1,350.00
E. A. Wadhams*	687.50
Class 17.—Mineral sperm oil: §	
The Manhattan Oil Co	50.00
Swan & Finch Co	75.00
Fiske Bros	70.00
Borne, Scrymser & Co	95.00
Class 18.—Beeswax:	
Shoemaker & Busch	139.00
J. A. Montgomery	150.00
Fiske Bros	144.00
John H. Tissot, jr	152.00
Smith, Kline & French Co.*	128.00
Class 19.—Soap:	
Shoemaker & Busch*	92.00
Class 19.—Soap—Continued.	
J. A. Montgomery	$128.00
Fiske Bros	116.00
John H. Tissot, jr	102.00
Class 20.—Waste:	
Michael Cavanagh	700.00
Shoemaker & Busch	674.00
James Reilley Supply Co*	550.00
Brooklyn Hardware & Sporting Goods Co	600.00
Chas. A. Moore	574.00
Chas. H. Pleasants	620.00
J. A. Montgomery	575.00
Fiske Bros	574.00
J. P. Nawrath	588.00
The Manhattan Supply Co	597.00
Geo. L. Neville	800.00
E. A. Wadhams	663.50
Class 21.—50,000 pieces linen tape:	
H. R. Davis*	590.00
J. P. Nawrath	(‡)
The Manhattan Supply Co	670.00
Class 22.—6,000 blacking brushes:	
Michael Cavanagh	1,044.00
J. A. Montgomery	1,044.00
Jacob Voelbel	1,047.00
The Manhattan Supply Co	1,039.20
Enterprise Brush Co.*	1,013.40
John H. Tissot, jr	1,068.00
Class 23.—4,000 scrub brushes:	
Michael Cavanagh*	560.00
J. A. Montgomery	560.00
Jacob Voelbel	600.00
The Manhattan Supply Co	588.00
Enterprise Brush Co	568.40
John H. Tissot, jr	576.00
Class 24.—Cups, bowls, and plates:	
Michael Cavanagh*	2,040.00
J. A. Montgomery	2,760.00
J. P. Nawrath	2,880.00
The Manhattan Supply Co	2,564.00
Ira B. White	2,760.00
John H. Tissot, jr	2,400.00
Class 25.—6,000 wisp brooms:	
Michael Cavanagh	748.80
Jas. Reilley Repair and Supply Co.*	720.00
Jas. A. Montgomery	800.00
H. R. Davis	787.50
Geo. R. Gibson	795.00
S. T. Peck & Co	900.00
The Manhattan Supply Co	852.00
Ira B. White	1,170.00
John H. Tissot, jr	780.00
Class 26.—25,000 pounds tinned ham:	
H. M. Anthony	3,845.00
Kemp, Day & Co	3,445.00
D. E. Boulton*	3,217.50
C. J. Caughey	5,750.00
Class 27.—25,000 pounds corned beef:	
H. M. Anthony	2,467.50
Kemp, Day & Co	2,375.00
D. E. Boulton*	2,222.50
C. J. Caughey	2,972.50
Class 28.—15,000 pounds mutton:	
H. M. Anthony	1,884.00
Kemp, Day & Co	1,069.50
Joseph C. Cooper*	1,062.50
D. E. Boulton	1,788.00
C. J. Caughey	1,270.50
Class 29.—2,000 gallons vinegar:	
John J. O'Rorke	182.20
James F. McGuire*	158.60
F. Foehrenback & Co	189.60
Class 30.—15,000 pounds sausage:	
H. M. Anthony*	1,497.00
Kemp, Day & Co	1,527.00
D. E. Boulton	1,650.00
Class 31.—Speaking tube:	
The Manhattan Supply Co.*	35.40
Class 32.—Sheet lead:	
Jas. Reilley Repair and Supply Co.	189.00
Brooklyn Hardware and Sporting Goods Co.*	184.84
Charles A. Moore	185.22
Charles H. Pleasants	234.36

* Accepted. † Tie bid. ‡ Informal. § No award.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 32.—Sheet lead—Continued.	
The Manhattan Supply Co	$185.22
Ira B. White	196.56
Geo. L. Neville	189.00
Class 33.—Seamless pipe:	
Jas. Reilley Repair and Supply Co.	423.32
Merchant & Co	423.32
The Ansonia Brass and Copper Co.	423.32
Morse Burtis	423.32
The Manhattan Supply Co	423.32
The American Tube Works	423.32
Geo. L. Neville*†	423.31
A. P. Swoyer & Co	423.32
Edward F. Keating	(‡)
Class 34.—Pipe and fittings:	
Jas. Reilley Repair and Supply Co.*.	599.70
Charles A. Moore	769.08
Morse Burtis	636.05
Class 34.—Pipe and fittings—Continued.	
The Manhattan Supply Co	$615.24
Edward F. Keating	1,465.68
Class 35.—Candles:	
Warner Ells*	98.00
Class 36.—Fire-hose valves:	
Charles A. Moore	240.00
Morse Burtis*	172.80
The Manhattan Supply Co	196.80
Edward F. Keating	252.00
Class 37.—Rubber gaskets:	
New York Belting and Packing Co.*	2,555.84
Jas. Reilley Repair and Supply Co.	2,754.14
Revere Rubber Co	4,340.53
The New Jersey Car Spring Co	3,231.53
The Manhattan Supply Co	2,685.10
Boston Woven Hose and Rubber Company	6,497.94

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated December 19, 1894; opened January 15, 1895.

Class 1.—Brushes, etc.:	
Armes & Dallam	$431.20
W. P. Fuller & Co.*	351.70
Francis Harral	484.96
Nelms & Co	469.80
Chas. M. Yates	512.58
Class 2.—Brushes:	
Armes & Dallam	419.40
W. P. Fuller & Co.*	356.70
Francis Harral	376.50
Nelms & Co	357.00
Chas. M. Yates	458.70
Class 3.—Metals:	
Miller, Sloss & Scott	2,089.30
Selby Smelting and Lead Co	1,894.00
E. A. Wadhams	(‡)
Pacific Metal Works	2,018.00
S. C. Forsaith Machine Co.*	1,859.13
Holbrook, Merrill & Stetson	1,967.00
Class 4.—Paints:	
E. A. Wadhams	(‡)
Charles M. Childs & Co	1,862.39
W. P. Fuller & Co.*	1,631.42
John Lucas & Co	2,010.71
Chas. M. Yates	1,686.86
Class 5.—Alcohol:	
W. P. Fuller & Co.*	530.00
Chas. M. Yates	540.00
Class 6.—Red lead:	
Charles M. Childs & Co	1,400.00
W. P. Fuller & Co	1,050.00
W. S. Miller	1,100.00
F. N. Woods*	1,046.00
Chas. M. Yates	1,050.00
Ensign & McDuffick	1,050.00
Class 7.—White lead:	
Charles M. Childs & Co	2,100.00
W. P. Fuller & Co	1,575.00
John Lucas & Co	1,785.00
W. S. Miller	1,650.00
F. N. Woods*	1,569.00
Chas. M. Yates	1,575.00
Ensign & McDuffick	1,575.00
Class 8.—Zinc:	
Charles M. Childs & Co	1,120.00
W. P. Fuller & Co	1,180.00
John Lucas & Co	1,095.00
Chas. M. Yates*	1,060.00
Class 9.—Varnishes:	
Charles M. Childs & Co.*	1,292.00
W. P. Fuller & Co	1,507.50
John Lucas & Co	1,543.25
Lawson Valentine Co	1,541.50
Chas. M. Yates	1,427.50
Class 10.—Turpentine:	
Charles M. Childs & Co	400.00
Class 10.—Turpentine—Continued.	
W. P. Fuller & Co.*	$222.50
W. S. Miller	235.00
Charles M. Yates	230.00
Ensign & McDuffick	245.00
Class 11.—Grease and tallow:	
W. P. Fuller & Co	127.50
American Oil Co	155.00
Charles M. Yates*	120.00
Ensign & McDuffick	180.00
New York Lubricating Oil Co	(‡)
Class 12.—Linseed oil:	
Charles M. Childs & Co	3,350.00
W. P. Fuller & Co	3,263.50
W. S. Miller*	3,225.00
Ensign & McDuffick	3,435.00
Class 13.—Lubricating oil:	
The Standard Oil Co	1,174.50
E. A. Wadhams*	1,050.00
W. P. Fuller & Co	1,375.00
J. N. Knowles	1,500.00
Charles M. Yates	1,235.00
Ensign & McDuffick	1,500.00
New York Lubricating Oil Co	1,475.00
Class 14.—Lard oil:	
The Manhattan Oil Co	3,125.00
E. A. Wadhams	3,187.50
W. P. Fuller & Co	3,135.00
J. N. Knowles	3,250.00
Charles M. Yates*†	3,125.00
Ensign & McDuffick	3,250.00
Class 15.—Cylinder oil:	
The Standard Oil Co	1,145.00
E. A. Wadhams	1,100.00
W. P. Fuller & Co.*	1,015.00
J. N. Knowles	1,250.00
Charles M. Yates	1,100.00
Ensign & McDuffick	1,050.00
Class 16.—Mineral oil:	
W. P. Fuller & Co	125.25
W. S. Miller*	107.00
Chas. M. Yates	120.00
Class 17.—Soap:	
Armes & Dallam	24.75
W. P. Fuller & Co.*	21.25
Class 18.—Waste:	
Miller, Sloss & Scott	880.00
E. A. Wadhams	795.00
Fiske Bros	725.00
Armes & Dallam	792.50
W. P. Fuller & Co	805.00
Jno. P. Nawrath*	718.00
Chas. M. Yates	795.00
Ensign & McDuffick	850.00

* Accepted. † Tie bid. ‡ Informal.

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated January 5, 1895; opened January 22, 1895.

Class 1.—Castings:	
American Steel Casting Co.*	$1,297.01
Midvale Steel Co	1,317.60
Class 2.—Files:	
McFadden Co	547.01
Charles A. Moore	514.35
Daniel Kelley	561.23
J. H. Chesley & Co	654.74
Brooklyn Hardware and Sporting Goods Co.*	486.55
Class 3.—Tools:	
McFadden & Co	$127.97
Charles A. Moore	236.22
S. C. Forsaith Machine Co	166.20
John H. Tissot, jr	171.80
Daniel Kelley	130.78
J. H. Chesley & Co	141.03
Brooklyn Hardware and Sporting Goods Co.*	123.11

Proposals for the supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated December 27, 1894; opened January 29, 1895.

Class 1.—Hardware:	
Dunham, Carrigan & Hayden Co	$1,821.13
Bradford, Kennedy Sons & McGuire*	1,648.37
F. W. Wright	1,965.90
Class 1.—Hardware—Continued.	
Francis Harral	$1,824.34
Miller, Sloss & Scott	1,897.79
The Palace Hardware Co	1,929.66

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated January 30, 1895; opened February 19, 1895.

Class 1.—Bolts:†	
The Manhattan Supply Co	$28.76
George L. Neville	32.90
Class 2.—Brushes:	
The Manhattan Supply Co	178.40
Francis Harral	137.34
George L. Neville	135.15
Nelms & Co.*	110.94
Class 3.—Hardware:	
The Manhattan Supply Co	108.12
Jas. Reilley Repair and Supply Co.*	103.84
George L. Neville	116.12
Class 4.—Tools:	
The Manhattan Supply Co	270.70
Francis Harral	204.35
George L. Neville	318.35
Brooklyn Hardware and Sporting Goods Co.*	163.27
Class 5.—Metals:	
A. Schrader & Son	89.12
James Reilley Repair and Supply Co.	64.29
George L. Neville	76.40
Class 5.—Metals—Continued.	
Merchant & Co.*	$58.01
Colwell Lead Co	90.66
Class 6.—Iron:	
Jas. Reilley Repair and Supply Co.*	17.50
George L. Neville	25.45
Class 7.—Gum:‡	
The Manhattan Supply Co	110.70
Jas. Reilley Repair and Supply Co.	96.40
Geo. L. Neville	204.00
Class 8.—Pipe and fittings:	
The Manhattan Supply Co	23.72
Jas. Reilley Repair and Supply Co.*	18.39
Geo. L. Neville	25.08
Class 9.—Diving suits:	
A. Schrader & Son*	1,080.00
Mayer & Co	1,180.00
Andrew J. Morse & Son	1,100.00
Class 10.—Tools:	
The Manhattan Supply Co	212.24
Francis Harral*	176.15
George L. Neville	217.38

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated January 31, 1895; opened February 19, 1895.

Class 1.—Bolts and nuts:	
George L. Neville	$43.27
Pancoast & Rogers*	34.60
J. H. Sternbergh	39.71
Edward F. Keating	42.21
The Manhattan Supply Co	50.12
Class 2.—Copper:	
Colwell Lead Co	447.61
Bradford, Kennedy Sons & McGuire	446.75
James Reilley Repair and Supply Co.	445.79
S. C. Forsaith Machine Co	515.73
Park Bro. & Co., Limited	439.15
George L. Neville	473.50
Merchant & Co	424.38
Jesse Lewisohn	450.46
J. W. Gaskill*	419.35
Ansonia Brass and Copper Co	419.89
Frank H. Geddes	419.85
Brooklyn Hardware and Sporting Goods Co	446.51
The Manhattan Supply Co	440.38
Class 3.—Copper tubing:	
Colwell Lead Co	2,558.21
American Tube Works	2,441.83
James Reilley Repair and Supply Co.	2,441.83
S. C. Forsaith Machine Co	2,551.32
George L. Neville* §	2,441.83
Merchant & Co	2,441.83
Morse Burtis	2,441.83
Class 3.—Copper tubing—Continued.	
J. W. Gaskill	$2,441.83
Ansonia Brass and Copper Co	2,441.83
Joseph E. Delroy	2,441.83
Frank H. Geddes	2,441.83
Brooklyn Hardware and Sporting Goods Co	2,441.83
The Manhattan Supply Co	2,441.83
Class 4.—Valves, etc.:	
S. C. Forsaith Machine Co	1,929.20
E. T. Tweedy	1,616.22
Morse Burtis	1,792.06
Henry S. Manning	2,311.53
Edward F. Keating*	1,561.20
The Manhattan Supply Co	1,991.40
Class 5.—Pipe fittings:	
Colwell Lead Co	167.05
Morse Burtis	87.09
Edward F. Keating*	79.95
Class 6.—Gauges, etc.:	
Colwell Lead Co	60.00
S. C. Forsaith Machine Co	76.00
Crosby Steam Gauge and Valve Co.	84.00
Henry S. Manning*	57.20
Class 7.—Antifriction metal:	
R. P. Rowe	1,015.00
Merchant & Co	1,120.00
Henry S. Manning*	805.00
The Manhattan Supply Co	875.00

* Accepted. † Open purchase. ‡ No award. § Tie bid.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 8.—Ingot copper:	
James Reilley Repair and Supply Co.	$2,000.00
S. C. Forsaith Machine Co	2,058.00
J. B. Kendall*	1,950.00
J. Friedenstein	1,990.00
Merchant & Co	2,000.00
Jesse Lewisohn	1,990.00
The Manhattan Supply Co	2,040.00
Class 9.—Boiler tubes:	
S. C. Forsaith Machine Co	2,567.68
Allison Manufacturing Co	2,731.70
Pancoast & Rogers*	2,208.96
Tyler Tube and Pipe Co	2,832.00
Class 10.—Rivets:	
S. C. Forsaith Machine Co	743.68
Pancoast & Rogers*	697.20
J. H. Sternbergh	871.50
Class 11.—Nut blanks:	
S. C. Forsaith Machine Co	471.76
J. H. Sternbergh	385.29
The Manhattan Supply Co.*	376.73
Class 12.—Steel angles:	
Joseph H. McKee	221.36
S. C. Forsaith Machine Co.*	152.01
Class 13.—Furnaces:†	
Class 14.—Shafts:	
The Midvale Steel Co.*	12,722.03
Bethlehem Iron Co	15,098.67
Class 15.—Steel forgings:	
The Midvale Steel Co.*	4,976.13
Carnegie Steel Co	10,878.79
Bethlehem Iron Co	8,471.98
Class 16.—Steel billets:	
The Midvale Steel Co.*	229.29
Joseph H. McKee	458.58
S. C. Forsaith Machine Co	504.44
Bethlehem Iron Co	305.72
Park Bros. & Co., Limited	603.79
Henry S. Manning	259.86
The Manhattan Supply Co	412.72
Class 17.—Pistons:	
The Midvale Steel Co.*	1,380.00
American Steel Casting Co	1,587.00
Class 18.—Castings:	
The Midvale Steel Co	1,235.00
American Steel Casting Co	1,420.25
New York Frog and Switch Co.*	617.50
Class 19 A.—Boiler plates (carbon):‡	
Carbon Steel Co.*	9,926.54
Class 19 B.—Boiler plates (nickel):	
Carnegie Steel Co.*	10,745.22
Carbon Steel Co	(§)
Class 20.—Carbon steel boiler plates:	
Carnegie Steel Co.*	1,058.17
Park Bro. & Co., Limited	1,175.75
Carbon Steel Co	1,928.00
Class 21.—Candles:	
Peter Comstock	1,050.00
S. C. Forsaith Machine Co	1,175,00
Warner Ells*	1,037.50
Class 22.—Flannel lining:	
John P. Nawrath	1,103.00
M. Berg‡	1,019.15
D. C. Devlin	1,201.90
Herman Heidelberg	1,073.25
The Manhattan Supply Co	1,071.20
John H. Tissot, jr.*	1,067.00
Class 23.—White twill:	
John P. Nawrath*	918.00
M. Berg	920.00
D. C. Devlin	1,016.25
Herman Heidelberg	920.00
The Manhattan Supply Co	948.60
John H. Tissot, jr	942.40
Class 24.—Spool cotton, etc.:	
Wm. H. Horstmann Co	354.00
John P. Nawrath	364.00
Edward E. Eames	(§)
M. Berg	325.00
Herman Heidelberg	339.00
Wm. Wilson	(§)
The Manhattan Supply Co.*	307.20
Class 25.—Sewing silk:	
Wm. H. Horstmann Co	$351.50
John P. Nawrath	347.00
Marc M. Michael	394.00
Edward E. Eames	(§)
W. W. Foulkrod	389.28
M. Berg	373.50
Herman Heidelberg*	329.50
Eureka Silk Co	371.00
C. H. Keith	372.00
Jno. Thos. Brooks	341.50
The Manhattan Supply Co	450.00
Class 26.—Silk laces:	
Wm. H. Horstmann Co	242.50
John P. Nawrath	197.50
H. W. Schloss*	187.33
W. W. Foulkrod	229.00
M. Berg	(§)
Herman Heidelberg	201.25
Jno. H. Tissot, jr	194.00
Class 27.—Bone buttons:	
Wm. H. Horstmann Co.* ‖	84.00
John P. Nawrath	84.00
W. Foulkrod	88.06
M. Berg	84.00
Herman Heidelberg	84.00
The Manhattan Supply Co	112.00
John H. Tissot, jr	100.00
Class 28.—Rubber buttons:	
India Rubber Comb Co.*	518.75
Wm. H. Horstmann Co	543.33
John P. Nawrath	542.50
W. W. Foulkrod	526.00
M. Berg	522.50
Herman Heidelberg	525.00
The Manhattan Supply Co	563.00
John H. Tissot, jr	535.00
Class 29.—Cap device buttons:	
Wm. H. Horstmann Co	46.25
W. Foulkrod	50.00
M. Berg	47.50
Herman Heidelberg*	45.00
Class 30.—Cap leathers:	
Wm. H. Horstmann Co	210.00
John P. Nawrath*	120.00
M. Berg	132.28
Herman Heidelberg	150.00
H. P. Davis	187.50
Brooklyn Hardware and Sporting Goods Co	162.00
The Manhattan Supply Co	147.00
John H. Tissot, jr	165.06
Class 31.—Cap visors:	
Wm. H. Horstmann Co	93.00
M. Berg	113.00
Herman Heidelberg	119.50
The Manhattan Supply Co	68.60
John H. Tissot, jr.*	98.40
Class 32.—50,000 yards of unbleached drill:	
John P. Nawrath	4,615.00
Wm. W. Foulkrod	4,080.00
D. C. Devlin	4,735.00
Herman Heidelberg	4,035.00
H. R. Davis	3,880.00
The Manhattan Supply Co	3,982.50
John H. Tissot, jr.*	3,845.00
Class 33.—5,000 spools linen thread:	
Wm. H. Horstmann Co	323.33
John P. Nawrath*	250.00
Herman Heidelberg	280.50
The Manhattan Supply Co	336.00
John H. Tissot, jr	290.00
Class 34.—6,000 pieces worsted tape:	
Wm. H. Horstmann Co	120.00
Herman Heidelberg	252.00
H. R. Davis*	118.80
The Manhattan Supply Co	324.00
Class 35.—2,500 gallons sirup:	
Charles E. Ahrens*	450.00
John J. O'Rorke	499.25
C. J. Caughey	550.00

* Accepted. † Open purchase. ‡ No award. § Informal. ‖ Tie bid.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 36.—5,000 pounds evaporated apples:	
Charles E. Ahrens	$500.00
John J. O'Rorke*	448.50
C. J. Caughey	587.00
The Manhattan Supply Co	710.00
Class 37.—10,000 gallons beans:	
Chas. E. Ahrens	3,600.00
John J. O'Rorke	3,411.00
C. J. Caughey	3,800.00
The Manhattan Supply Co.*	3,409.00
Class 38.—10,000 pounds butter:	
Simpson, McIntire & Co.*	2,670.00
James F. Oyster	3,022.00
Chas. E. Ahrens	2,900.00
Class 39.—3,000 tins for coffee:	
Charles E. Ahrens	735.00
Mary Beggs*	648.00
Fiske Bros	703.20
The Manhattan Supply Co	732.00
Class 40.—White pine:	
Export Lumber Co	980.00
Chas. E. Pell*	905.00
Marc M. Michael	1,180.00
Watson & Pittinger	918.00
W. R. Adams	1,060.00
Class 41.—Mahogany:	
Chas. E. Pell*	2,093.00
Wm. E. Updegrove & Bro	3,080.00
Class 42.—Spruce plank:	
Export Lumber Co	270.00
Class 42.—Spruce plank—Continued.	
Chas. E. Pell	$284.75
Watson & Pittinger*†	270.00
W. R. Adams	305.00
Class 43.—White ash:	
Export Lumber Co	460.00
Chas. E. Pell*	420.00
Watson & Pittinger	436.00
W. R. Adams	500.00
Class 44.—Cherry:	
Chas. E. Pell	1,303.00
S. C. Forsaith Machine Co	1,755.00
Watson & Pittinger*	1,265.00
Class 45.—Yellow pine:	
Export Lumber Co	1,200.00
Chas. E. Pell	1,060.50
Eppinger & Russell*	950.00
Geo. L. Neville	2,500.00
Watson & Pittinger	1,080.00
Class 46.—Brass screws:	
Bradford, Kennedy Sons & McGuire*	158.10
Jas. Reilley Repair and Supply Co.	194.55
J. H. Chesley & Co	166.90
Geo. L. Neville	333.80
Francis Harral	167.90
Morse Burtis	168.10
Brooklyn Hardware and Sporting Goods Co	159.90
The Manhattan Supply Co	163.40
Jno. H. Tissot, jr	170.20

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated February 8, 1895; opened February 26, 1895.

Class 1.—Sewing silk:	
Edwin Heidelberg*	$380.00
T. B. Thompson	398.75
Philip Joseph	400.00
W. D. Clark & Co	490.00
John P. Nawrath	390.00
Edwin H. Taggart	403.20
The Manhattan Supply Co	462.00
Class 2.—Manila paper:	
Albert Garr	90.00
Standard Supply and Equipment Co.	98.70
W. D. Clark & Co	80.10
John P. Nawrath	126.00
The Manhattan Supply Co.*	72.00
Class 3.—Bolts:	
J. H. Chesley & Co	988.95
Geo. L. Neville	2,013.42
Class 3.—Bolts—Continued.	
J. H. Sternbergh	$1,097.34
J. B. Kendall*	948.03
Class 4.—Braid:	
Edwin Heidelberg*	1,377.50
Standard Supply and Equipment Co.	1,624.50
W. D. Clark & Co	1,634.00
Joseph Loeb	1,662.50
Henry W. Schloss	1,387.00
Jno. P. Nawrath	1,605.50
Edwin H. Taggart	1,482.00
The Manhattan Supply Co	1,643.50
Class 5.—Nickel steel plates:	
Carbon Steel Co	34,676.40
Bethlehem Iron Co	30,927.60
Carnegie Steel Co.*	227,915.16

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated February 28, 1895; opened March 19, 1895.

Class 1.—15,000 yards trousers cloth:	
B. Y. Pippey & Co	$22,399.50
The Buena Vista Cassimere Mills	22,950.00
Conshohocken Woolen Co.*	22,125.00
Wendall, Fay & Co	23,239.50
Class 2.—Cap cloth:	
B. Y. Pippey & Co	20,625.00
The Buena Vista Cassimere Mills	19,275.00
Conshohocken Woolen Co.*	19,125.00
The Blackenton Co	21,637.50
Wendall, Fay & Co	20,361.00
Class 3.—20,000 pairs woolen socks:	
B. Y. Pippey & Co.*	4,650.00
Thompson Brothers	5,500.00
Thos. G. Hood	4,850.00
Class 4.—3,000 pairs calfskin shoes:	
Watsontown Boot and Shoe Co	7,020.00
Class 4.—Shoes—Continued.	
H. Leh & Co	$5,925.00
George F. Roedel*	5,550.00
John E. Jacobs	5,922.00
Bay State Shoe and Leather Co	5,700.00
Class 5.—10,000 mattress covers:	
Jesse I. Strauss	5,049.00
Herman Heidelberg	5,300.00
Martin J. McGowan*	4,898.00
Thos. M. Farley	5,078.00
The Manhattan Supply Co	4,939.00
Jno. P. Nawrath	5,499.00
Class 6.—10,000 knife lanyards:	
Wm. H. Horstmann Co.*	990.00
The Manhattan Supply Co	1,600.00

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated February 26, 1895; opened March 19, 1895.

Class 1.—Hardware:	
Brooklyn Hardware and Sporting Goods Co	$214.05
J. H. Chesley & Co.*	195.80
George L. Neville	(‡)
Ira B. White	215.95
Bradford, Kennedy Sons & McGuire	267.90
Class 2.—White pine:	
Thos. W. Smith	$924.00
Nathan B. Gaskill	823.00
George A. Shehan	995.00
George L. Neville	1,270.00
Grayson & Cain	996.00
National Supply and Investment Co	924.00

* Accepted. † Tie bid. ‡ Informal.

Proposals for supplies for the navy-yard, Washington, D. C., etc.—Continued.

Class 2.—White pine.—Continued.	
Philip Walsh & Sons	$998.00
Marc M. Michael	1,222.60
Church & Stephenson	1,092.00
W. T. Galliher & Bro	938.00
W. T. & F. B. Weaver*	723.00
Class 3.—Tools.	
Brooklyn Hardware and Sporting Goods Co	683.46
J. H. Chesley & Co	523.18
Philadelphia Machinery and Supply Co	480.49
John H. Tissot, jr	495.91
S. C. Forsaith Machine Co	503.24
Ira B. White*	473.94
Bradford, Kennedy Sons & McGuire	562.66
Chas. A. Moore	545.87
Francis Harral	484.84
Class 4.—Fire brick:	
J. W. Paxson & Co	282.00
J. B. Kendall	180.00
Geo. L. Neville	164.94
Clark Bros. Lime and Cement Co	(†)
J. T. Walker's Sons*	150.00
James H. McGill	172.00
Class 5.—Molding sand:	
J. W. Paxson & Co.*	200.00
Geo. L. Neville	500.00
Class 6.—Copper:	
J. B. Kendall	2,343.74
Class 6.—Copper—Continued.	
Jesse Lewisohn	$2,450.00
S. C. Forsaith Machine Co	2,545.00
The American Metal Co., Limited	2,307.50
Frank H. Woodruff	2,675.00
James Clendenin*	2,247.50
Class 7.—Pig iron:	
J. B. Kendall*	293.50
N. B. Handy & Co	337.50
Geo. L. Neville	450.00
S. C. Forsaith Machine Co	318.75
Thompson C. Gill & Co	362.50
Frank H. Woodruff	357.50
Chas. A. Moore	435.00
Class 8.—Sheet brass: ‡	
Brooklyn Hardware and Sporting Goods Co	13.22
Geo. L. Neville	16.80
Bradford, Kennedy Sons & McGuire	14.82
Francis Harral	15.00
Class 9.—Drill rods:	
J. H. Chesley & Co	315.16
J. B. Kendall	209.65
Philadelphia Machinery and Supply Co	211.05
E. J. Brooks & Co.*	192.54
Geo. L. Neville	210.30
Frank H. Woodruff	297.00
Bradford, Kennedy Sons & McGuire	330.85

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated February 27, 1895; opened March 19, 1895.

Class 1.—Bolts:	
Edward F. Keating*	$30.46
Donegan & Swift	39.94
Morse Burtis	52.40
Jas. Reilley Repair and Supply Co	34.45
E. V. White & Co	35.80
Ira B. White	33.81
J. H. Sternbergh	37.51
Bradford, Kennedy Sons & McGuire	35.66
A. P. Swoyer & Co	34.45
Thompson C. Gill & Co	48.15
Geo. L. Neville	34.45
Class 2.—Sheet brass and copper:	
Edward F. Keating	160.66
Donegan & Swift	157.75
Manufacturers' Agency Co	163.21
The Ansonia Brass and Copper Co	146.36
Jas. Reilley Repair and Supply Co	154.91
Merchant & Co	145.36
Brooklyn Hardware and Sporting Goods Co	164.45
Ira B. White	158.95
Bradford, Kennedy Sons & McGuire	164.35
A. P. Swoyer & Co.*	145.26
Thompson C. Gill & Co	154.81
Geo. L. Neville	152.82
Lewis H. Jones	156.21
Class 3.—Iron:	
Donegan & Swift	213.90
Jas. Reilley Repair and Supply Co	196.77
S. C. Forsaith Machine Co	196.65
E. V. White & Co	217.30
Bradford, Kennedy Sons & McGuire	179.97
Geo. L. Neville	192.29
Chas. A. Moore	220.59
N. B. Handy & Co.*	168.43
Frank H. Woodruff	214.23
Class 4.—Sheet gum:	
Donegan & Swift	136.35
Manufacturers' Agency Co	1,997.02
Jas. Reilley Repair and Supply Co	145.44
Ira B. White	140.70
Bradford, Kennedy Sons & McGuire*	110.80
A. P. Swoyer & Co	113.47
Geo. L. Neville	136.20
Class 5.—Gauges and valves:	
Edward F. Keating	98.88
Donegan & Swift	163.95
Class 5.—Gauges and valves—Continued.	
Jas. Reilley Repair and Supply Co	$144.62
S. C. Forsaith Machine Co	109.06
E. V. White & Co	114.34
Ira B. White	255.70
A. P. Swoyer & Co	87.74
Crosby Steam Gauge and Valve Co.*	83.50
Geo. L. Neville	91.40
Chas. A. Moore	97.80
Class 6.—Copper tubing and brass pipe:	
Edward F. Keating	341.76
Donegan & Swift	378.57
The Ansonia Brass and Copper Co	340.43
Jas. Reilley Repair and Supply Co	349.61
Merchant & Co	340.26
Brooklyn Hardware and Sporting Goods Co*	338.10
Bradford, Kennedy Sons & McGuire	356.04
A. P. Swoyer & Co	358.19
Geo. L. Neville	338.79
Class 7.—Valves and pipe fittings:	
Edward F. Keating	276.73
Donegan & Swift	317.56
Morse Burtis	312.34
Jas. Reilley Repair and Supply Co	378.40
E. V. White & Co	376.55
Ira B. White*	264.06
Bradford, Kennedy Sons & McGuire	271.22
Geo. L. Neville	318.76
Class 8.—Steel plates:	
Carnegie Steel Co., Limited*	665.00
S. C. Forsaith Machine Co	986.40
Ira B. White	877.24
Carbon Steel Co	808.06
Geo. L. Neville	780.00
Chas. A. Moore	925.60
N. B. Handy & Co	741.00
Frank H. Woodruff	1,040.00
Class 9.—Steel angles:	
Carnegie Steel Co., Limited*	206.40
S. C. Forsaith Machine Co	202.40
Ira B. White	275.20
Thompson C. Gill & Co	268.00
Geo. L. Neville	264.00
Chas. A. Moore	254.40
N. B. Handy & Co	219.20
Frank H. Woodruff	288.00

*Accepted. †Informal. ‡No award.

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated February 25, 1895; opened March 26, 1895.

Class 1.—Brooms and brushes:	
Miller, Sloss & Scott	$142.14
Pacific Tool and Supply Co	103.30
Dunham, Carrigan & Hayden Co	98.72
Louis E. Lake	119.95
Francis Harral*	87.14
Class 2.—Hardware:	
Miller, Sloss & Scott	884.26
S. C. Forsaith Machine Co	923.23
Pacific Tool and Supply Co	817.76
Dunham, Carrigan & Hayden Co.*	748.55
Bradford, Kennedy Sons & McGuire	819.27
Alexander Hamilton	806.24
Francis Harral	811.68
Class 3.—Lamp fixtures:	
Miller, Sloss & Scott	368.00
Nathan Dormann & Co.*	288.00
Wm. Porter's Sons	319.00
Porter's Son & Co	327.00
Louis E. Lake	373.00
E. Hazard Ackmann	432.00
Manhattan Brass Co	305.00
Class 4.—Leather, etc.:	
Miller, Sloss & Scott	477.60
S. C. Forsaith Machine Co	439.98
Alfred J. Marcus*	355.50
Max Frank	(†)
Louis E. Lake	456.70
Chas. C. Nichols	362.70
Class 5.—Tobins bronze:	
Miller, Sloss & Scott	1,309.27
Holbrook, Merrell & Stetson	1,407.60
Pacific Tool and Supply Co	1,300.80
Dunham, Carrigan & Hayden Co	1,396.51
Ansonia Brass and Copper Co.*	1,279.45
Class 6.—Metals:	
Miller, Sloss & Scott*	5,223.50
Holbrook, Merrill & Stetson	5,429.95
S. C. Forsaith Machine Co	5,858.70
Dunham, Carrigan & Hayden Co	5,405.25
Selby Smelting and Lead Co	5,247.00
Class 6.—Metals—Continued.	
J. S. Van Winkle & Co	$5,836.45
Class 7.—Iron:	
Miller, Sloss & Scott	927.82
Holbrook, Merrill & Stetson*	868.19
S. C. Forsaith Machine Co	1,456.92
Dunham, Carrigan & Hayden Co	887.42
J. S. Van Winkle & Co	1,322.12
Class 8.—Packing:	
Miller, Sloss & Scott	1,385.12
Boston Woven Hose and Rubbber Co	1,270.50
Pacific Tool and Supply Co	1,524.25
Dunham, Carrigan & Hayden Co	1,471.65
John Arnet	1,373.73
H. T. Lally	1,649.00
Fiske Bros	1,304.00
Francis Harral*	1,154.00
Class 9.—Files:	
Miller, Sloss & Scott	829.86
Pacific Tool and Supply Co	761.51
Dunham, Carrigan & Hayden Co	731.32
California Saw Works	891.72
J. S. Van Winkle & Co	914.13
Ira B. White*	580.66
Alexander Hamilton	682.80
Class 10.—Tools:	
Miller, Sloss & Scott	242.90
S. C. Forsaith Machine Co	300.60
Pacific Tool and Supply Co	228.20
Bradford, Kennedy Sons & McGuire*	204.00
J. S. Van Winkle & Co	253.26
Alexander Hamilton	264.00
Francis Harral	233.50
Class 11.—Squilgees, etc.:	
Miller, Sloss & Scott	185 00
Louis E. Lake	149.00
Francis Harral*	92.00
Harry Unna	158.00
Class 12.—Sugar, etc.:	
The Manhattan Supply Co	3,040.00
Herman Levi*	2,610.00

Proposals for 120,000 pounds tobacco for navy-yard, under Bureau advertisement dated February 20, 1895; opened March 30, 1895.

Class 1:	
P. H. Hanes & Co	$0.26
P. Lorillard Co	.25
Butler & Bosher, sample AA	.26 $\frac{44}{100}$
Butler & Bosher, sample BB*	.25$\frac{1}{2}$
Wright & Bros. Tobacco Co	.25$\frac{1}{2}$
J. W. Rowe & Co	.27$\frac{1}{2}$
J. J. Hickok & Co	.26 $\frac{44}{100}$
J. W. Cullingworth	.28
A. Maupin & Co., sample No. 1	.26 $\frac{44}{100}$
A. Maupin & Co., sample No. 2	.25$\frac{1}{2}$
Pace Talbott Co	.26$\frac{1}{2}$
W. T. Hancock	.28
Class 1.—Continued.	
Toledo Tobacco Works Co	0.29\frac{1}{2}$
Baxter & Bird	.26 $\frac{44}{100}$
John H. Maclin & Son	.27$\frac{1}{2}$
Chas. P. Buchanan, sample V	.27$\frac{1}{2}$
Chas. P. Buchanan, sample W	.27
C. J. Caughey	.29
R. H. Boykin & Co	.26
P. H. Mayo & Bro	.28
F. J. Dessoir	.26 $\frac{44}{100}$
S. W. Venable Tobacco Co	.26 $\frac{44}{100}$
Bland Bros. & Wright	.26$\frac{1}{2}$

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated March 14, 1895; opened April 2, 1895.

Class 1.—Manila hemp:	
A. Davis Weld*	$3,500.00
The Manhattan Supply Co	(†)
Class 2.—Galvanized steel wire:	
Trenton Iron Co.*	2,219.25
Ira B. White	2,578.50
Class 2.—Wire—Continued.	
Thompson C. Gill & Co	$2,261.90
Washburn & Moen Manufacturing Co	2,595.50
The Manhattan Supply Co	2,285.50
George L. Neville	2,278.25

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated March 15, 1895; opened April 2, 1895.

Class 1.—Broken stone:	
Chas. G. Smith & Son	$500.00
James Symington	458.00
Sam'l P. Oast	520.00
Thompson C. Gill & Co	598.00
Nimmo & Stokes	490.00
Geo. L. Neville*	436.00
Class 2.—Silica:	
James Symington	$657.00
Nimmo & Stokes*	591.00
Geo. L. Neville	645.00
Class 3.—Sand:	
James Symington	720.00
John T. Bolton*	132.00

* Accepted

† Informal

Proposals for supplies for the navy-yard, Norfolk, Va., etc.—**Continued.**

Class 3.—Sand—Continued.	
Samuel P. Oast	$135.00
Nimmo & Stokes	148.80
Geo. L. Neville	150.00
Lindsay & Co	135.00
Class 4.—Cement (Portland):	
E. A. Holmberg	3,945.00
Atlas Cement Co.*	3,105.00
James Symington	3,750.00
Samuel P. Oast	3,900.00
Batchelder & Collins	3,285.00
Nimmo & Stokes	3,495.00
Manhattan Cement Co	3,495.00
James H. McGill	3,120.00
Geo. L. Neville	3,300.00
Lindsay & Co	3,225.00
Class 5.—Burlaps:	
Daniel Canning Devlin	259.60
The Manhattan Supply Co	316.00
Geo. L. Neville*	199.60
Class 6.—Yellow pine:	
W. C. Cooke	817.60
Duke & Smith*	564.00
Geo. L. Neville	614.64
Class 7.—Round iron:	
Charles A. Moore	135.80
N. B. Handy & Co.*	91.00
Bradford, Kennedy Sons & McGuire	122.50
Frank H. Woodruff	117.60
Thompson C. Gill & Co	109.20
Ira B. White	103.74
Geo. L. Neville	94.50
Class 8.—Bolts and rivets:	
Bradford, Kennedy Sons & McGuire	34.45
Ira B. White	35.43
Class 8.—Bolts and rivets—Continued.	
The Manhattan Supply Co	$40.87
Geo. L. Neville*	30.16
Class 9.—Sheet brass and copper:	
Edward F. Keating	139.55
Bradford, Kennedy Sons & McGuire	144.98
Thompson C. Gill & Co	145.93
A. P. Swoyer & Co	153.08
Ira B. White	144.38
The Manhattan Supply Co	147.49
Geo. L. Neville*	131.38
Class 10.—Valves, etc.:	
Chas. A. Moore	229.14
Edward F. Keating*	204.15
Bradford, Kennedy Sons & McGuire	318.12
S. C. Forsaith Machine Co	324.75
Ira B. White	209.50
Geo. L. Neville	226.99
Class 11.—Iron:	
Chas. A. Moore	252.55
N. B. Handy & Co.*	210.59
Bradford, Kennedy Sons & McGuire	215.36
Frank H. Woodruff	214.52
Thompson C. Gill & Co	269.74
S. C. Forsaith Machine Co	232.05
Ira B. White	245.85
Geo. L. Neville	241.51
Class 12.—Seamless tubing:	
Chas. A. Moore	323.14
Edward F. Keating*	320.17
Bradford, Kennedy Sons & McGuire	259.09
A. P. Swoyer & Co	333.32
The Manhattan Supply Co	360.85
Geo. L. Neville	329.64

Proposals for supplies for the navy-yard, Mare Island, Cal., under Bureau advertisement dated March 13, 1895; opened April 9, 1895.

Class 1.—Brick:	
A. Powell	$1,428.80
A. S. Carman*	1,425.00
Wm. Walker	1,596.00
Class 2.—Lime:	
A. Powell	236.25
A. S. Carman	240.00
Wm. Walker*	228.00
Class 3.—Cement:	
A. Powell*	360.50
A. S. Carman	364.00
Wm. Walker	413.00
Class 4.—Sand:	
A. Powell*	178.50
A. S. Carman	180.00
Wm. Walker	195.00
Class 5.—Glass:	
Miller, Sloss & Scott*	$136.53
Class 6.—Spikes, etc.:	
Thompson C. Gill & Co	126.72
Miller, Sloss & Scott*	100.80
Class 7.—Oregon pine:	
A. Powell	2,577.00
A. S. Carman*	2,431.10
Wm. H. Leahy	2,857.60
Wm. Walker	2,698.80
Class 8.—Redwood:	
A. Powell*	222.84
A. S. Carman	238.00
Wm. H. Leahy	263.41
Wm. Walker	243.00

Proposals for supplies for the navy-yard, Norfolk, Va., under Bureau advertisement dated March 30, 1895; opened April 16, 1895.

Class 1.—Cut spikes:	
Ira B. White*	$41.41
Thompson C. Gill & Co	56.00
J. H. Chesley & Co	47.04
Geo. L. Neville	42.00
Jas. Reilley Repair and Supply Co.	45.50
Class 2.—Yellow pine:	
Philip Walsh & Sons	2,978.40
A. A. McCullough	1,687.80
Wm. M. Burgan	1,836.00
Duke & Smith	1,692.60
Geo. L. Neville*	1,446.40
Class 3.—White pine:	
Philip Walsh & Sons*	59.50
A. A. McCullough	90.00
Wm. M. Burgan	62.50
Geo. L. Neville	70.00
Class 4.—Hardware:	
Ira B. White	$82.79
Thompson C. Gill & Co	127.17
J. H. Chesley & Co	81.84
Geo. L. Neville*	80.74
Jas. Reilley Repair and Supply Co.	121.20
Class 5.—White pine:	
Philip Walsh & Sons*	361.60
A. A. McCullough	465.00
Wm. M. Burgan	406.00
Geo. L. Neville	425.00
Class 6.—Yellow pine:	
Philip Walsh & Sons	628.25
A. A. McCullough*	423.00
Wm. M. Burgan	451.25
Duke & Smith	555.00
Geo. L. Neville	512.80

* Accepted.

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated March 29, 1895; opened April 16, 1895.

Class 1.—Cement:	
Geo. L. Neville	$707.85
Henry A. Jones & Co.*	564.85
James H. McGill	600.60
J. G. & J. M. Waters	657.80
Samuel M. Frazier	586.30
Thompson C. Gill & Co	1,108.25
Wm. G. Wheatly	772.20
Class 2.—Broken stone:	
Chas. G. Smith & Son	894.25
W. T. & F. B. Weaver	1,095.00
Brandywine Granite Co	1,423.50
Consolidated Quarry Co.*	693.50
Thompson C. Gill & Co	2,372.50
Class 3.—Nails:	
J. H. Chesley & Co.*	42.70
W. T. & F. B. Weaver	46.00
Ira B. White	52.80
Geo. L. Neville	47.50
Thompson C. Gill & Co	60.00
James Reilley Repair and Supply Co.	52.00
Class 4.—Yellow pine:	
W. T. Galliher & Bro	1,272.36
Grayson & Cain	1,384.84
Thos. W. Smith	1,244.12
W. T. & F. B. Weaver	1,466.64
Class 4.—Yellow pine—Continued.	
National Supply and Investment Co.	$1,149.12
Geo. L. Neville	1,188.64
Philip Walsh & Sons	1,642.24
Nathan B. Gaskill & Co.*	1,108.40
Class 5.—Pulleys:	
Ira B. White	698.00
Geo. L. Neville*	453.01
Williams & Hanks	523.10
Class 6.—White pine:	
W. T. Galliher & Bro	278.00
Grayson & Cain	252.24
Thos. W. Smith*	251.00
W. T. & F. B. Weaver	254.00
National Supply and Investment Co.	254.00
Philip Walsh & Sons	274.50
Nathan B. Gaskill	284.00
Class 7.—Pipe fittings:	
Williams & Hanks	82.74
Edward F. Keating*	60.92
James Reilley Repair and Supply Co.	71.70
Class 8.—Castings:	
Bethlehem Iron Co.*	435.10
Penn Steel Casting and Machine Co.	549.60
American Steel Casting Co	618.30

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated March 28, 1895; opened April 16, 1895.

Class 1.—Brushes:	
Francis Harral*	$48.60
The Manhattan Supply Co	65.10
Class 2.—White pine:	
Watson & Pittinger*	1,155.00
Chas. E. Pell	1,875.00
Class 3.—Yellow pine:	
Watson & Pittinger*	246.00
Geo. L. Neville	400.00
Charles E. Pell	300.00
Class 4.—Quartered oak:	
Watson & Pittinger*	2,100.00
Geo. L. Neville	2,239.00
C. F. Hodsdon Co	2,265.00
Class 5.—Hickory butts:	
Watson & Pittinger*	50.00
Charles E. Pell	60.00
Class 6.—Bronze powder:	
Jas. Reilley Repair and Supply Co.*	55.00
Shoemaker & Busch	94.00
Thompson C. Gill & Co	125.00
Charles M. Childs & Co	120.00
Class 7.—Alcohol:	
Shoemaker & Busch	2,745.00
American Distributing Co.*	2,450.00
Geo. D. Bayard	2,575.00
Class 8.—Shellac:	
Shoemaker & Busch	611.25
Fiske Bros	614.25
Charles E. Ahrens	630.00
Charles M. Childs & Co	607.50
James Langmuir*	596.25
Class 9.—Raw linseed oil:	
Shoemaker & Busch	675.00
R. P. Rowe*	595.00
Fiske Bros	640.00
Chas. M. Childs & Co	620.00
Class 10.—5,000 gallons lubricating oil:	
New York Lubricating Oil Co	1,150.00
Class 10.—Oil—Continued.	
Fiske Bros	$1,450.00
The Manhattan Oil Co	1,025.00
Swan & Finch Co.*	897.50
Class 11.—Files:	
Jas. Reilley Repair and Supply Co	577.11
G. & H. Barnett Co	641.28
Brooklyn Hardware and Sporting Goods Co	525.30
J. H. Chesley & Co	529.02
Henry S. Manning	561.66
Francis Harral	573.42
The J. Barton Smith Co.*	505.68
Class 12.—Granite paving blocks:	
Edwin F. Marsden	5,476.65
Hay-Smith Garnsons Putnam Co	5,742.00
Brandywine Granite Co	6,525.00
Thompson C. Gill & Co.*	4,740.63
National Granite Co	6,307.50
The Guilford-Waterville Granite Co	6,786.00
The Manhattan Supply Co	6,261.39
James Symington	5,611.50
Henry M. Potter	5,829.00
Class 13.—Sand:	
Patrick Fox	480.00
Phœnix Towing and Transportation Co.*	238.00
The Manhattan Supply Co	580.00
James Symington	436.00
Murtagh & McCarthy	380.00
Class 14.—1 steam freight elevator:	
Otis Bros. & Co	1,750.00
Morse Williams & Co.*	1,464.00
The Ruddy Elevator Co	1,850.00
Class 15.—Reroofing building No. 9:	
Jas. Reilley Repair and Supply Co	1,858.50
Patrick Fox	2,475.00
Herman & Grace*	1,820.00

Proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated April 8, 1895; opened April 30, 1895.

Class 1.—Steel plates:	
Carnegie Steel Co	$727.92
The Otis Steel Co., Limited	839.91
Miller, Sloss & Scott	751.71
Dunham, Carrigan & Hayden Co.*	670.52
Class 2.—Steel angles:	
The Otis Steel Co., Limited	$401.97
Miller, Sloss & Scott	464.94
Dunham, Carrigan & Hayden Co.*	354.40

* Accepted.

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated April 20, 1895; opened May 7, 1895.

Class 1.—Electrical supplies:*	
Class 2.—Electrical supplies:	
Wm. Porter's Sons†	$496.25
International Trading and Electric Co	614.88
Page Bros. & Co	507.84
Class 3.—Electrical supplies:	
The Western Electric Co.†	762.45
E. S. Greely Co	958.87
James Reilley Repair and Supply Co	878.63
Class 4.—Electrical supplies:*	
Class 5.—Electrical supplies:*	
Class 6.—Electrical supplies:	
The Western Electric Co	704.25
Chas. Cory & Son†	669.35
Class 7.—Electrical supplies:	
Manhattan Supply Co	57.60
Bradford, Kennedy Sons & McGuire	43.49
Jas. Reilley Repair and Supply Co.†	41.30
Class 8.—Electrical supplies:	
The Western Electric Co.†	226.90
Manhattan Supply Co	407.65
Jas. Reilley Repair and Supply Co	283.74
Class 9.—Putty:	
Charles M. Childs & Co	$210.00
Jas. Reilley Repair and Supply Co.†	192.00
Class 10.—Raw linseed oil:	
Charles M. Childs & Co	1,290.00
H. J. Hayne & Sealy	1,240.00
R. P. Rowe†	1,200.00
Class 11.—Globe valves:	
S. C. Forsaith Machine Co	634.63
International Trading and Electric Co	604.00
John H. Tissot, jr	519.77
Morse Burtis	388.27
Chas. A. Moore	431.16
Bradford, Kennedy Sons & McGuire	437.22
Jas. Reilley Repair and Supply Co.†	366.55
Class 12.—Silk cravats:	
Charles T. Kellett	900.00
James R. Keiser	840.00
John P. Nawrath	840.00
James McCurrach†	700.00

Proposals for supplies for the navy-yard, Boston, Mass., under Bureau advertisement dated May 2, 1895; opened May 21, 1895.

Class 1.—Manila hemp:	
Aaron D. Wild's Sons†	$26,880.00
Manhattan Supply Co	(‡)
Class 2.—Galvanized wire:	
Geo. L. Neville	350.00
Class 2.—Wire—Continued.	
Manhattan Supply Co	$440.00
Washburn & Moen Manufacturing Co.†	320.00
Trenton Iron Co	360.00

Proposals for supplies for the New York Navy-Yard, under Bureau advertisement dated May 14, 1895; opened June 5, 1895.

Class 1.—5,000 yards overcoat cloth:	
John H. Tissot, jr	$11,095.00
B. Y. Pippey & Co	11,050.00
The Manhattan Supply Co.†	10,899.00
Class 2.—2,000 dozen rubber buttons, large:	
Wm. W. Foulkrod†	338.20
India Rubber Comb Co	349.20
John P. Nawrath	346.60
Louis Wechsler	374.00
John H. Tissot, jr	352.00
The Manhattan Supply Co	358.00
Class 3.—50,000 spools sewing silk:	
The Brainard & Armstrong Co.†	1,098.75
John P. Nawrath	1,250.00
Louis Wechsler	1,335.00
Theodore B. Thompson	1,135.00
Union Supply Co	1,240.00
John T. Brooks	1,112.92
Class 4.—10,000 woolen jerseys:	
Wm. W. Foulkrod	14,750.00
John H. Tissot, jr	14,700.00
B. Y. Pippey & Co	14,587.00
F. M. McWilliams	16,090.00
Sam'l Barron†	14,245.00
Class 5.—500 mess kettles:	
John H. Tissot, jr	245.00
The Manhattan Supply Co.†	219.50
Class 6.—500 mess pans:	
John H. Tissot, jr	175.00
The Manhattan Supply Co.†	160.00
Class 7.—200,000 pounds salt-water soap:	
Frank V. Wiriman†	6,740.00
Frank Morgan	6,978.20
M. Jenkins	(‡)
John J. O'Rorke	7,160.00
The Manhattan Supply Co	6,880.00
Class 8.—10,000 neckerchiefs:§	
Wm. W. Foulkrod	9,300.00
John P. Nawrath	10,000.00
Marshall Field	9,597.00
Manhattan Supply Co	9,570.00
Class 9.—Safes:	
Geo. E. Foster	1,735.00
M. Mosler	1,720.00
National Safe and Lock Co	1,586.00
Class 9.—Safes.—Continued.	
York Safe and Lock Co	$2,217.50
The Macneale and Urban Co	1,600.00
Chas. H. Pleasants	1,825.00
B. Y. Pippey & Co	1,706.00
Herring-Hall-Marvin Co.†	1,540.00
Class 10.—1,000 tins for sewing silk:	
John H. Tissot, jr	70.00
Mary Beggs†‖	70.00
The Manhattan Supply Co	84.00
Class 11.—15,000 pounds candles:	
Warner Ellis	1,[illegible]5.00
The American Grocery Co. (E. F. Cuming)	1,537.50
Peter Comstock†	1,500.00
Class 12.—1,000 gallons pease:	
Chas. E. Ahrens†	198.00
The American Grocery Co. (E. F. Cuming)	207.50
John J. O'Rorke	199.70
Class 13.—15,000 pounds rice:	
Chas. E. Ahrens†	810.00
The American Grocery Co. (E. F. Cuming)	873.00
C. J. Caughey	877.50
John J. O'Rorke	814.50
Class 14.—2,000 pounds evaporated peaches:	
Chas. E. Ahrens	198.00
The American Grocery Co. (E. F. Cuming)	187.50
C. J. Caughey	227.50
John J. O'Rorke†	157.40
Class 15.—25,000 pounds tinned tomatoes:	
Kemp, Day & Co	735.00
Chas. E. Ahrens	687.50
The American Grocery Co. (E. F. Cuming)†	548.61
C. J. Caughey	650.00
John J. O'Rorke	592.50
Class 16.—25,000 pounds tinned mutton:	
Joseph F. Galliher	1,562.50
Kemp, Day & Co	1,925.00
Joseph C. Cooper	1,750.00
D. E. Boulton	(‡)

* Open purchase. † Accepted. ‡ Informal. § No award. ‖ Tie bid.

Proposals for supplies for the New York Navy-Yard, etc.—Continued.

Class 17.—5,000 pounds tea:	
Chas. E. Ahrens	$1,095.00
Belford & Morrison	1,775.00
F. M. McWilliams	1,461.50
Amerian Grocery Co. (E. F. Cuming)	1,189.00
C. J. Caughey	1,531.25
John J. O'Rorke*	1,068.50
The Manhattan Supply Co	1,170.00
Class 18.—100,000 pounds sugar:	
Chas. E. Ahrens	4,700.00
The American Grocery Co. (E. F. Cuming)	4,640.00
C. J. Caughey	4,585.00
John J. O'Rorke*	4,400.00
The Manhattan Supply Co	4,624.00
Class 19.—5,000 pounds oatmeal:	
Kemp, Day & Co	260.00
Chas. E. Ahrens	175.00
The American Grocery Co. (E. F. Cuming)	171.50
F. M. McWilliams	189.00
C. J. Caughey	206.25
John J. O'Rorke*	167.50
The Manhattan Supply Co	235.00
Class 20.—2,000 gallons vinegar:	
James F. McGuire	178.60
Chas. D. Boyd	180.00
H. J. Heins Co	360.00
Chas. E. Ahrens	190.00
F. Foehrenbach & Co.*	166.00
John J. O'Rorke	189.40
Class 21.—20,000 pounds butter:	
Chas. E. Ahrens*	4,580.00
James F. Oyster	4,724.00
Simpson, McIntire & Co	4,934.00
Class 22.—Nails:	
Frank H. Woodruff	$321.75
Chas. H. Pleasants	351.75
Thompson C. Gill & Co	311.60
The Manhattan Supply Co.*	294.50
Class 23.—White pine:	
Chas. E. Pell	1,487.50
Watson & Pittinger	1,470.00
Geo. L. Neville	2,125.01
American Lumber Co	1,692.50
Export Lumber Co.*	1,420.00
Class 24.—Poplar:	
Chas. E. Pell*	1,725.00
Watson & Pittinger	1,752.00
Geo. L. Neville	1,990.00
American Lumber Co	2,337.50
Export Lumber Co	1,800.00
Class 25.—Teak wood:	
Chas. E. Pell	600.00
Watson & Pittinger*	590.00
Class 26.—Varnish:	
John Lucas & Co	375.00
Standard Varnish Works*	300.00
James Langmuir	357.00
The United States Varnish Co	750.00
Chas. H. Pleasants	417.00
F. M. McWilliams	328.50
Class 27.—Vermilion:	
James Lucas & Co	264.80
James Langmuir	270.40
Chas. H. Pleasants*	256.72
F. M. McWilliams	295.44

Proposals for supplies for the navy-yard, Washington, D. C., under Bureau advertisement dated May 20, 1895; opened June 5, 1895.

Class 1.—Cement:	
E. G. Gummel*	$148.50
Class 2.—Building stone:	
W. T. & F. B. Weaver	303.75
Chas. J. Smith & Son*	301.05
E. G. Gummel	337.50
Class 3.—Piles:	
Nathan B. Gaskill	1,151.50
M. M. Wakefield	705.00
D. C. Alexander	669.75
Class 3.—Piles—Continued.	
L. A. Clarke*	$611.00
W. T. Galliher & Bro	793.12
W. T. & F. B. Weaver	705.00
Thos. W. Smith	817.80
J. P. Nawrath	1,233.75
Class 4.—Yellow pine:	
Nathan B. Gaskill*	271.36
W. T. Galliher	298.11
Thos. W. Smith	319.51

Proposals for supplies for the Mare Island Navy-Yard, under Bureau advertisement dated May 11, 1895; opened June 5, 1895.

Class 1.—Brass pipe:	
Holbrook, Merrill & Stetson	$270.54
Chas. F. Tay	360.72
Chas. E. Miller	298.59
Merchant & Co	260.52
The Manhattan Supply Co.* †	260.52
Class 2.—Valves:	
S. C. Forsaith Machine Co	138.36
Holbrook, Merrill & Stetson	100.44
Chas. F. Tay*	96.36
Dunham, Carrigan & Hayden Co	187.74
Chas. E. Miller	200.16
Class 3.—Pipe covering:	
Wm. H. Barkley	211.38
Chas. F. Tay	186.40
Chas. E. Miller	231.84
Wm. B. Morgan*	183.87
Thompson C. Gill & Co	190.97
Class 4.—Asbestus mill board:	
Wm. H. Barkley	$39.30
S. C. Forsaith Machine Co	30.39
Chas. F. Tay	19.65
Dunham, Carrigan & Hayden Co.*	18.73
Chas. E. Miller	28.82
The Manhattan Supply Co	62.88
Thompson C. Gill & Co	49.78
Class 5.—Sheet brass:	
Holbrook, Merrill & Stetson*	73.40
Chas. F. Tay	86.24
Dunham, Carrigan & Hayden Co	93.30
Chas. E. Miller	106.43
Merchant & Co	88.08
The Manhattan Supply Co	94.15
Thompson C. Gill	103.67
Class 6.—Salt-water soap:	
Otto Lecher & Co*	3,240.00

* Accepted. † Tie bid.

REPORT

OF

THE SURGEON-GENERAL,

U. S. NAVY.

NAVY DEPARTMENT,
BUREAU OF MEDICINE AND SURGERY,
Washington, D. C., September 11, 1895.

SIR: In obedience to instructions contained in Department's letter of July 10, 1895, I have the honor to report the operations of this Bureau for the last fiscal year, accompanied by a set of annual estimates for the fiscal year ending June 30, 1897, and statistical report showing the health of the Navy for the year 1894. The report embraces a statement of the condition of the naval hospital fund, the naval medical establishment, and other matters of interest pertaining to the duties of the Bureau of Medicine and Surgery.

NAVAL HOSPITAL FUND.

The condition of this fund is as follows:

Balance on hand July 1, 1894	$309,345.28
Transferred to the credit since July 1, 1894	111,267.42
Credit by appropriation for fiscal year 1895	20,000.00
	440,612.70
Expended since July 1, 1894	101,107.10
Balance on hand June 30, 1895	339,505.60

APPROPRIATIONS AND REASONS FOR INCREASE.

The explanation of the excess of appropriations over that of last year, and the necessity therefor, is as follows:

1. *Medical Department.*—Ten thousand dollars additional is required under this appropriation to meet expenses arising from an increase in the number of men in the Navy and an increase in number of ships going into commission, which necessarily demand an increased supply of surgical and medical outfits in properly equipping the medical departments of these ships.

2. *Naval hospital fund.*—No increase has been asked under this appropriation, but authority requested for substitution of brick for Sing Sing marble for construction of ward at naval hospital, Brooklyn, N. Y., authorized by act approved July 26, 1894.

For construction of similar additional ward to increase needed capacity of hospital, $25,000, which sum shall be paid from that portion

of the naval hospital fund accruing from sale of naval hospital grounds to the city of Brooklyn, and placed to the credit of the naval hospital fund, in pursuance of the provisions of the act approved July 2, 1890.

Bids for the new ward (authorized by act of Congress approved July 26, 1894) were invited and received, based upon plans and specifications drawn in conformity with the provisions of said act, which called for the new ward "to be constructed of the same material used for the present hospital." The material used in the construction of the present hospital building, formerly known as "Sing Sing marble," is not now in general use, is very difficult to procure, and has to be specially quarried.

Unless the above modification as regards material for construction of new wards is allowed, nothing can be done toward increasing the capacity of the hospital, as every bid received was far in excess of the amount authorized for the work.

By allowing the above change, as proposed under naval hospital fund, and the desired authority from Congress obtained, the naval hospital, Brooklyn, N. Y., will be able to accommodate its proper quota of sick and wounded.

3. *Contingent.*—Five thousand dollars additional is required under this appropriation, for the reasons mentioned for an increase under Medical Department.

4. *Naval cemetery, navy-yard, Mare Island, Cal.*—An appropriation of $1,000 for the cemetery named is submitted in accordance with Department's order of December 4, 1894, after a personal inspection of the premises. The improvements are deemed necessary to put the cemetery in the condition it should be.

NAVAL HOSPITALS.

Naval hospital, Portsmouth, N. H.—A proper building in which to treat contagious and infectious diseases, to which attention was called in Bureau's last annual report, is very much needed, and an outhouse for the storage of tools, paints, oils, etc., should also be provided.

The Bureau having ascertained that there was a marked settling and sagging of the main halls, stairways, and kitchen and wash-room floors of the hospital building, the commandant was requested to order a board of survey to determine the cause of such defects and to recommend such repairs and alterations, accompanied by estimates for the entire work, as would thoroughly renovate the building.

Based upon the report of the board, in which certain changes were recommended, a requisition for the work was approved and the repairs have been completed.

Naval hospital, Chelsea, Mass.—The installation of the electric-light plant in the buildings and grounds of this hospital, the work on which had commenced at date of Bureau's last report, has been completed and is in successful operation.

Minor repairs to hospital outbuildings have been made. Steam pipes and drains have been repaired where necessary. Twenty-four fire buckets, eight Junior Babcock fire extinguishers, and a Chelsea City fire-alarm box have been introduced as additional protection of the hospital property from fire.

Although the water used for drinking purposes from the Mystic River is muddy and has an unpleasant odor from the presence of organic matter, it does not appear to have been the cause of disease or produced any bad effects.

Naval hospital, New York.—The roof of the main hospital building has been repaired; annex hospital building repaired and fitted up for the reception of patients during the repairs and improvements to the main hospital building, authorized by act of Congress approved July 26, 1894, the work on which was commenced on the 17th of July last. Repairs to the hospital stable are now being made, and it is hoped that they will be completed by the 1st of October next.

The walls of the brick coal bin have been strengthened, the east wall being taken down and rebuilt; the north wall was shored up into line, and all of the buttresses were strengthened and carried up to the eaves.

Naval hospital, Philadelphia, Pa.—The north wing of this hospital, which had been utilized by the Bureau of Yards and Docks since 1866, was transferred to this Bureau and was thoroughly repaired and put in complete condition for the reception and treatment of the sick and wounded of the Navy.

The plumbing system of the entire building has been renovated; new bath tubs and water-closets replaced those worn-out and of obsolete type; supply and drain pipes overhauled and replaced by new ones; old surface drains replaced by new ones. Two iron water tanks were replaced by new ones of steel; minor repairs made to steam boilers and heating apparatus. Two new pulley elevators, worked by hand, have replaced those formerly in use. An operating room properly equipped with every modern appliance has been fitted up in the hospital.

Naval hospital, Washington, D. C.—The medical officer in charge of the hospital reports that the labor of keeping the hospital clean is much greater than it would be were the unpaved streets surrounding the reservation on E street south and Ninth and Tenth streets east properly covered with asphalt, as on the Pennsylvania avenue front. These streets are sources of dirt and discomfort, especially during the season when windows are kept open and the prevailing southerly winds cover the wards with dust.

Naval hospital, Norfolk, Va.—The south wing of this hospital, which had been out of commission since the close of the late war, was found to be in a dilapidated condition and required extensive repairs. Estimates were obtained for putting it in a state of thorough repair. Work on the verandas has been completed. All woodwork, including floors, doors, windows, etc., have been renovated. Combination gas and electric fixtures have been introduced. The heating apparatus is now being installed. The contract for wiring the building has been awarded, and it is confidently anticipated that this wing of the hospital will in a short time be thoroughly renovated and equipped for the reception and care of the sick and wounded of the Navy.

Boilers 1 and 2 having been condemned by survey, the Bureau of Steam Engineering was requested to construct and install at the hospital two boilers to replace them. The boilers are being made at the navy-yard, Norfolk, and it is believed that they will be completed and placed in position by the 1st of October next. The third boiler (Manning boiler) will be repaired upon the completion and installation of the new boilers.

Naval hospital, Pensacola, Fla.—With the exception of minor improvements there were no repairs made to the hospital building at this station.

Naval hospital, Mare Island, Cal.—During the past year the hospital has undergone extensive renovation. The hospital building (including its roof), the medical director's house, the stable, and all outbuildings

have been painted. A "Ducker hospital," with accommodations for four patients, purchased by the Bureau in 1890, and which had been stored away in the navy-yard, was erected to the south of the main hospital building and fitted up for the reception of contagious diseases.

The laundry has been overhauled, a new chimney built, and 180 feet of pipe renewed in the drying chamber. The building containing laundry, furnaces, boilers, steam pump, and morgue has been repaired and painted.

A concrete or artificial-stone pavement has been laid from the terminus of the present walk to the northern boundary of the hospital reservation and the old pavement repaired. During the past year ward No. 4, heretofore used as quarters for officers, has been thoroughly repaired and furnished for the reception of patients.

An important sanitary feature has been the introduction during the past year of Green Valley water for supplying the navy-yard and hospital. The supply is practically unlimited, and with a pressure sufficiently great to reach far above the highest buildings.

Naval hospital, Yokohama, Japan.—The buildings and grounds of the hospital are in good condition. A supporting wall 86 feet long and 2½ feet high has been built in the rear of the grounds. Two hundred and fifty feet of the stone wall facing the front of hospital was in danger from a washout caused by the street having been graded down, but upon proper representation of this fact to the Japanese authorities it was promptly and substantially repaired.

The buildings have been painted and minor repairs made where necessary. A substantial cistern, with a capacity of 15,000 gallons, has been constructed and will soon be ready for use.

SPECIAL HOSPITAL NOTES.

Naval hospital, New York.—The favorable opinion entertained of the value of strychnia in the treatment of pneumonia has been further strengthened by the experience of its use during the past year, forty-five cases of acute lobar pneumonia having been treated in this hospital in the last two years, with three deaths, a mortality of 6.06 per cent.

NAVY-YARDS.

Navy-yard, Portsmouth, N. H.—The general health of the station and sanitary condition of the yard is good. During the year there have been no epidemics. One case of scarlet fever was under treatment, but a further development of the disease was prevented by the adoption of strict sanitary precautions.

The average number of officers and enlisted men was 137; total admissions to the sick list, 173; number of sick days, 573.

Navy-yard, Boston, Mass.—One case of typhoid fever developed, but it is believed to have originated outside of the yard.

The Harvard Medical College Laboratory supplied charged culture tubes and apparatus to be used in any case of suspected diphtheria.

Very little sickness has developed among officers and men, the average complement being 250.

The Metropolitan Sewer Company, of Massachusetts, has put down in the yard one of the main branches of its system; the trench was 1,600 feet long, 18 feet deep, and 6 feet wide. These excavations had no deleterious effects on the health of the yard. It is very desirable that the yard sewer system be connected with this new one. An electric plant is in process of installation.

Marine barracks.—Initial air space in sleeping quarters and ventilation insufficient; efficiently heated by steam.

Prison.—Inner and middle cells should be removed; prisoners should be fed at a mess table and not in individual cells; prisoners are overfed and get inadequate exercise; might very profitably be put to work in the yard.

Officers' quarters.—Lower yard houses: Main waste pipe underlies the casement of these houses and is trapped in each kitchen. This arrangement is faulty, and should be replaced by running a main drain in rear of the houses, of good pitch, trapped in the open air, and connected with each house by a separate pipe. Many of the closets in the offices and workshops are defective and should be replaced. Should the yard be reopened almost the entire system of water-closets would have to be replaced.

Navy-yard, New York.—The health of the yard appears to have been satisfactory. One death occurred from diabetes associated with tuberculosis; catarrhal troubles are frequent, but a majority of the cases did not require to be excused from duty. Twenty-three patients were transferred to hospital from the marine barracks, and two, both injuries, from the navy-yard.

The grounds are imperfectly drained and water is found very near the surface.

Navy-yard, League Island, Pa.—The average complement of officers, men, and employees of this yard was 259. There were 93 admissions to the sick list, with a total of 366 sick days. Of those admitted, 21 were transferred to the naval hospital, Philadelphia. During the year there were 5 admissions for malarial causes, which may be ascribed to the filling in of the low, marshy portion of the yard with the dredgings from the island up the river.

The station is still dependent for drinking water upon the rain supply collected in tanks, each building having its own supply with facilities for its proper distribution. The Delaware River water is supplied for fire purposes, etc., throughout the yard, and fire plugs occur at frequent intervals.

As a result of the filling in of the eastern end of the island, the cellars of several of the houses in the yard are frequently filled with water. This condition might be obviated by the construction of a proper system of drainage, relieving this overflow, which takes place after every heavy rain.

Navy-yard, Washington, D. C.—The general sanitary condition of the yard is good. There were 148 admissions to the sick list. Of this number 116 returned to duty, 29 were transferred to hospital, 1 transferred to Government Hospital for the Insane, 1 discharged from the service, and 1 committed suicide. There were 93 surgical cases occurring among the navy-yard workmen, consisting of 35 incised wounds, 17 lacerated wounds, 4 punctured wounds, 23 contused wounds, 3 burns and scalds, 1 injury to eye, 8 amputations, and 2 fractures. Of the enlisted force but 1 death occurred, which was suicidal. Among the navy-yard workmen, 1 death occurred by scalding by steam. The condition of the sewers on Sixth and Ninth streets is practically unchanged since last year.

In December, 1894, the receiving ship *Dale* was put out of commission, and the class of seamen gunners were quartered in the old rigging loft, and although this building was repaired at considerable cost and made quite comfortable, its situation in the lower part of the yard renders it undesirable for its present use.

Navy-yard, Norfolk, Va.—During 1894 there were 133 admissions. Eighty-nine were discharged to duty, no deaths occurred, and 44 were transferred to hospital. The sick days were 526, and in the previous year 827. There were no epidemic diseases and but few serious cases of sickness. Malarial troubles were less frequent, but during the summer months 31 cases of acute diarrhœa occurred.

Among employees of the yard only 72 workmen were injured, but sudden cases of sickness were frequent.

The sewerage of the marine barracks will be improved in accordance with the recommendation of a board of survey, and the Department has also authorized the change of the surgeon's office and dispensary to a more desirable location.

Navy-yard, Mare Island, Cal.—During July and August, 1894, a number of marines were sent to Sacramento in connection with the railroad strike. Many of these men suffered from the prevalent malaria during the latter part of their encampment there and after their return to this station. Arsenic has answered better than quinine in these cases. Although Mare Island is not believed to originate the malarial miasm, yet the conditions here are favorable for the development of the disease in those in whom the diathesis is latent.

The water supply has been increased by connecting with Vallejo.

Tiled waste pipes wherever in use should be replaced by large cast-iron ones. The plumbing in some of the officers' quarters is still defective. The sanitary condition of the employees' quarters is bad. The "Smead closet" in use in the barracks is not altogether satisfactory, owing to defective construction.

NAVAL STATIONS.

Naval training station, Newport, R. I.—The health of this station, which includes the U. S. S. *Constellation*, the United States Naval War College, and the United States Marine Barracks, has been good for the past year, and, with the exception of 11 cases of measles, no diseases of an epidemic or contagious character have occurred.

The water supply for the naval training station is obtained almost entirely from artesian wells, with a depth of 90 to 100 feet. The water is pumped to an elevated reservoir with a capacity of 300,000 gallons and from there distributed to all parts of the station. Though not of a high degree of purity, as shown by the presence of organic matter and the large amount of free ammonia and nitrites, it may be considered safe for drinking purposes, and no diseases have occurred during the year that could be attributed to its use.

The new marine barracks, authorized by act of Congress approved March 3, 1893, and for which the sum of $15,000 was appropriated, has been completed and is now occupied. It is located on the east side of Coasters Harbor Island, and consists of a two-story wooden building with accommodations for 60 marines, and with an air capacity of 900 cubic feet for each man. The ventilation of the building is excellent, and the water-closets, lavatories, and system of drainage are of the most approved and modern type. The building is heated by steam coils and radiators and lighted by electricity.

Recognizing the necessity of making more suitable provision for the care and treatment of the sick on this station, Congress at its last session appropriated the sum of $20,000 for this purpose.

From a careful inspection and examination of the plans and specifications of the hospital it would appear that in the construction of the building every provision has been made to meet the requirements necessary for the proper care and treatment of the sick on this station.

The hospital is to be constructed of wood, having three stories with two wings and a central administration building.

Torpedo station.—The sanitary condition of the island and buildings continues to be excellent. There have been 19 admissions to the sick list of cases of malarial fever, which in every instance was contracted by the patients while on the U. S. receiving ship *Dale* at Washington, D. C.

The dispensary and sick quarters have proved adequate for the needs of the station during the past year.

The variable climate of Newport and vicinity produces attacks of neuralgia and rheumatic affections, the latter often of severe character. With the above exceptions the station is unusually free from influences injurious to health.

Naval station, New London, Conn.—For the last year the health of the officers and men attached to the station has been good. The civil employees of the station, however, have not been so fortunate, a large proportion of whom suffered from an epidemic of malaria coming on at the end of a very dry summer. In a total of 37 civilian employees 33 suffered from attacks of the disease. The usual variety of types marked these cases; several, being unrelieved by continued use of quinine, were subject to periodical attacks until the commencement of cold weather.

A large shallow pond, about a quarter of a mile from the lower end of the station, from which the supply of ice for the station is obtained, was evidently the principal source of the malarial poison.

Naval station, Annapolis, Md.—The health of the Academy has been good and the low rate of sickness which prevailed at the date of the Bureau's last annual report has been maintained. No epidemics or contagious diseases have occurred, with the exception of a few cases of mumps and whooping cough among the cadets and enlisted men.

Attention is called to that portion of the report of Medical Director Walton with reference to the casualties among the cadets resulting from the present method of playing football as practiced at the Academy, and unless materially modified it is recommended that rival games be prohibited.

The water supplied by the Annapolis Water Company is much improved. New water mains have been laid and the reservoirs put in good order.

A new fumigator has been erected adjoining the boiler house, and a temperature of about 250° F. can be obtained for disinfecting purposes.

An addition to the present building (used for sick quarters) is required for an operating room and bacteriological laboratory.

Naval proving ground, Indian Head, Md.—The health of the officers and workmen attached to this station during the past year has been good. Many of the workmen suffered with mild attacks of malarial fever, but in no instance was the disease attended with serious consequences. In October last three cases of smallpox occurred at Pisgah, 6 miles from the station. The house in which the disease appeared was strictly quarantined, everyone attached to the station was vaccinated, and the spread of the disease prevented.

The water supply and drainage of the station are good.

Naval station, Port Royal, S. C.—The health of this station has been remarkably good during the past year, and the cases of malarial fever reported as caused by climatic influences or exposure were not contracted on the station. The contrast is particularly noticeable between the health of the station, where cistern water is used, and that of the immediate surrounding country, where the use of water from surface shallow wells is the rule. This is well illustrated in the immunity pos-

sessed by the marines with quarters in the station who are exposed at night in all kinds of weather, while the enlisted men who reside on the island outside of the station, are generally the victims of fever.

A dispensary and surgeon's office with accommodations for an emergency ward would add materially to the efficiency of the medical department.

As the station is dependent entirely upon rain water for all drinking and cooking purposes, it is recommended that the present storage capacity (60,000 gallons) be increased. All attempts to obtain potable water through driven wells have failed.

RECEIVING SHIPS.

U. S. receiving ship Wabash.—The sanitary condition of the ship has been good, as indicated by the reports made during the year. An analysis of these reveals the fact that none of the diseases for which patients were admitted to the sick list could be attributed to conditions incident to life on board ship.

The average complement for the year was 172. Record of enlistments for the year shows: Number examined, 701; accepted, 353; rejected, 348.

U. S. receiving ship Vermont.—The record of enlistments for the year shows: Number of persons examined, 2,145; accepted, 1,283; rejected, 862.

During the first quarter of the year there were at one time over one thousand names on the ship's books; many of them were recruits, and with that number on board the ship was badly crowded and there was considerable sickness among the men. Several cases of measles, roseola, and varicella occurred, but were promptly transferred to the naval hospital and every precaution taken to prevent the spread of these diseases. Tonsillitis was of frequent occurrence among the apprentices and landsmen, and the number of cases in which suppuration followed an attack of this disease was very noticeable.

U. S. receiving and training ship Minnesota.—The sanitary condition of this ship remains good, and no diseases of an epidemic character have made their appearance on board. The excellent sanitary condition may be attributed to the sanitary improvements recently introduced, and which have added to the comfort of everyone on board.

During the year 1894 there were 996 examinations made on this vessel; of these, 92 were men to fill vacancies in the crew. There were 904 examinations of candidates for apprentices; 334 were accepted and 570 rejected; of the 334 accepted, 250 enlisted. Of the total number of examinations a much larger percentage was accepted this year than last, probably due to the greater care shown by the recruiting officer in selecting the boys who presented themselves for the physical examination.

U. S. receiving ship Richmond.—On June 11, 1894, the U. S. receiving ship *St. Louis* was replaced by the *Richmond*, which had been brought down from the Newport training station.

The number of recruits examined during the year was 537; accepted, 279; rejected, 258. Number of apprentices examined, 119; accepted, 40; rejected, 79.

Changes have been made with the object of making the quarters of the men more comfortable. The forecastle has been closed in, and this space, in connection with the berth deck, affords ample quarters for the accommodation of the crew.

U. S. receiving ship Franklin.—The ship is in excellent sanitary condition, as shown by the small number of admissions to the sick list from causes attributable to local influences. There have been 176 admissions to the sick list and 1 case continued from last year, making a total of 177 cases treated. The total number of sick days for the year was 870.

During the past year 274 men have been examined for the naval service—accepted, 188; rejected, 86.

U. S. receiving ship Independence.—The general health of the ship's company has been good. There have been no epidemics of any kind and a large proportion of those admitted to the sick list were suffering from diseases having a local origin.

During the past year 595 men were examined, 473 accepted, and 122 rejected. The remarkably large percentage of those accepted for the service may reasonably be accounted for from the fact that a superior class of men presented themselves for enlistment, owing, probably, to the dull times and scarcity of work on shore, and to the fact that there were a large number of enlistments of honorable-discharge and continuous-service men, of whom there were 232 during the year.

It may be interesting to remark that of the 595 men presenting themselves for enlistment or reenlistment, 298 of them were native-born Americans.

RECRUITING.

Number of persons examined	8,246
Number accepted	4,994
Number rejected	3,246
Number color-blind	157
Number rejected, per thousand	393.64
Number color-blind, per thousand	19.03

The above figures, exclusive of enlistments on cruising ships, afford an approximate idea of the amount and character of the work performed by the recruiting officers during the past year. The percentage of acceptances and rejections at the different rendezvous varies considerably, depending largely upon the class of men presenting themselves for enlistment, the proportion of rejections being naturally much greater among recruits without previous naval service.

The attention of the Department is again called to the advisability of limiting the number of recruiting stations, establishing a rendezvous at the navy-yard, New York, for all examinations in the East, and another at the navy-yard, Mare Island, for supplying recruits for the Asiatic and Pacific stations.

Two rendezvous, thus established and properly fitted up with every appliance for carrying on this work, would fully meet the demands of the service.

UNITED STATES NAVAL MUSEUM OF HYGIENE.

Work has steadily advanced at this establishment since last report. Rooms have been renovated and put in suitable condition to receive special exhibits; connecting archways have been made throughout the entire building; main stairway erected from first floor to chemical and bacteriological laboratories; all the buildings and gateway to grounds have been painted, and other necessary minor repairs executed. The large rotunda with dome is now being repaired and fitted up for a library and lecture room. Exhibits are being classified, and water connections made in rooms set apart for display of house drainage, filters, and closets.

Medical Director Gorgas, until recently in charge of the museum, was ordered as a delegate to represent the Medical Department of the Navy at the Eighth International Congress of Hygiene and Demography, which convened at Budapest, Austria-Hungary, September 1 to 9, 1894. He was directed to make a complete and thorough inspection of the museums of hygiene at London and Berlin, and to report in detail on the various interesting subjects covered by his special letter of instructions, a synopsis of which was embraced in the Bureau's last annual report. I regret to state that he was taken ill while on this duty abroad, and never sufficiently recovered to prepare his report. He had to be relieved from duty at the museum on account of ill health, and died a few weeks afterwards.

The work of the museum has necessarily been interfered with on account of the repairs going on, and many investigations properly belonging to the bacteriological and chemical laboratories delayed.

In the interest of the Association of Official Agricultural Chemists, work has recently commenced in the laboratory on the methods of estimating fusel oil in spirits. Very little has been done in this country relating to the subject, and since the deleterious effects of ardent spirits upon the human system are thought by most authorities to be due to the fusel oil contained in them rather than to the ethyl alcohol, it seems to be a matter of considerable hygienic importance to establish methods which can be used to keep the spirits produced in this country as free as possible from fusel oil. A report of this work has been submitted by William Bromwell, Ph. D., and will be continued by him with the hope of obtaining complete and comprehensive results.

It is the intention of the Bureau to make the Naval Museum of Hygiene as complete in every arrangement and detail as establishments of like character abroad, and it is expected by another year to have the present instructive exhibit properly classified so as to show the advances that have been made to date in sanitary science, and opportunity given for the practical study of hygiene, so essential to the welfare of the Navy and the public at large.

The Commissioners of the District of Columbia have been notified that the buildings and grounds will soon be opened to the public, and they have been requested to lay an asphalt roadway from Twenty-third and F streets to museum entrance, thus making a continuous asphalt pavement from the Navy Department to the museum.

Medical Director Bates was assigned to duty at the museum May 28, 1895.

UNITED STATES NAVAL LABORATORY AND DEPARTMENT OF INSTRUCTION.

Three assistant surgeons have received the prescribed course of instruction at this establishment during the past year, and one medical officer who has just passed a successful examination for admission to the corps is at present undergoing instruction.

All examination papers received since last report have been carefully inspected and continue to give evidence of satisfactory work on the special branches taught.

SICK QUARTERS ON U. S. NAVAL VESSELS.

Attention was called in Bureau's last annual report to the necessity of providing improved accommodations for the sick and wounded on board vessels of war and to the assignment, when practicable, of suf-

ficient space on the gun deck for hospital purposes. It is believed that good results could be accomplished in this direction if the board of inspection and survey were officially directed to pay special attention to the subject, and the medical officer attached to the board required to visit all ships, and submit special reports upon their facilities for the care and treatment of the sick and wounded; defining changes to be made when found necessary and feasible; reporting upon such facts as can be readily obtained relating to officers' quarters, gun and berth decks, number of occupants and total air space allowed; location and ventilation of prisons, storerooms, dynamo, fire, and engine rooms, and average temperature of each under steam; accessibility, condition, and ventilation of holds and bilges, and such other information as would be of value to the Department in determining the character of alterations to be made when the vessel becomes available and before being recommissioned.

STATISTICAL REPORT.

The newly revised statistical report, adopted for the purpose of obtaining complete and accurate data for determining the actual health of the Navy, went into effect on January 1, 1895, with most satisfactory results, and will enable the Bureau to publish in subsequent annual reports complete yearly statistics of all diseases coming under the new classification, together with interesting and reliable information on other subjects, so much needed, and which can only be obtained by a report of this kind.

REVISION OF SUPPLY TABLE.

The supply table of the Medical Department of the Navy, which was carefully revised during the past year, meets fully the needs of the naval medical service. Changes in its contents will be made as often as may be required by advances in materia medica and improvements in surgical appliances.

Within the past year the question of supplying hospitals and ships with proper microscopes and accessories has been carefully considered. Sample outfits have already been furnished the Bureau, and after certain minor modifications have been made all hospitals and ships will be equipped as rapidly as the outfits can be contracted for under the appropriation available for this purpose.

VACANCIES IN THE MEDICAL CORPS OF THE NAVY.

During the last fiscal year there were 269 applications made to the Department for information concerning the appointment of assistant surgeons in the Navy. Replies containing instructions were promptly forwarded in every instance. Out of this number only 33 applied for permission to appear before the naval medical examining board, as follows:

Alabama	1	New York	8
California	3	North Dakota	1
District of Columbia	1	Ohio	1
Illinois	1	Pennsylvania	1
Kentucky	1	South Carolina	1
Massachusetts	3	Tennessee	2
Michigan	1	Virginia	2
Mississippi	3	West Virginia	1
New Hampshire	1		
New Jersey	1	Total	33

Of the 33 mentioned who received permission, 19 availed themselves of the opportunity to appear before the Board, and of this number there were 3 rejected physically and 12 rejected professionally, leaving only 4 out of the 269 original applicants, representing every section of the country, who were found qualified for appointment as assistant surgeon, viz:

Alabama	1	California	1
District of Columbia	1	New York	1

It may be well to mention, for comparison, that there is no difficulty in filling vacancies in the Medical Corps of the Army and Marine Hospital Service, both corps having at present the full quota of assistant surgeons allowed by law, while at this date there are fourteen vacancies in that grade in the Medical Corps of the Navy, and the services of that number of assistant surgeons are needed at once for hospitals, ships, and other stations. The law does not provide for the temporary appointment of acting assistant surgeons to meet the emergency that has arisen.

NAVY PENSIONS.

There has been but a slight decrease, as shown by last year's record, in the number of pension cases received and answered during the past fiscal year. Although all calls from the Pension Office have been answered without unnecessary delay, the Bureau finds it extremely difficult, with the small clerical force available for this duty, to keep the work from falling behind.

Number of pension cases remaining on hand June 30, 1894	0
Number received during fiscal year ending June 30, 1895	5,321
Number answered during fiscal year ending June 30, 1895	5,083
Number remaining on hand June 30, 1895	238

The miscellaneous reports associated with the pension work are shown by the following record:

Number of cases for board of medical examiners received and answered during fiscal year ending June 30, 1895	135
Number of cases for retiring board received and answered during fiscal year ending June 30, 1895	34
Number of cases from Judge-Advocate-General received and answered during fiscal year ending June 30, 1895	38
Number of cases from Civil Service Commission received and answered during fiscal year ending June 30, 1895	12
Number of Congressional, Fourth Auditor, and miscellaneous letters received and answered during fiscal year ending June 30, 1895	152
Number of certificates of death received during fiscal year ending June 30, 1895	136
Number of reports of medical survey received and answered during fiscal year ending June 30, 1895	451
Number of reports of physical disqualification received during fiscal year ending June 30, 1895	117

AMERICAN PUBLIC HEALTH ASSOCIATION—AMERICAN MEDICAL ASSOCIATION—ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

Medical Director A. L. Gihon was ordered as a delegate to represent the Medical Department of the Navy at the meeting of the American Public Health Association, which was held at Montreal, Canada, September 24 to 28, 1894. In reporting the proceedings of the meeting a brief sketch of the organization is alluded to, in which attention is called to the work the association has accomplished in inaugurating measures for the restriction and prevention of contagious and infectious

diseases and in the diffusion, by its reports, discussions, and publications of sanitary knowledge among the people. His paper will be read with interest, and will be found among the special reports.

The American Medical Association met in Baltimore, Md., May 7 to 10, 1895. Medical Inspector T. C. Walton and Surg. S. H. Dickson represented the Medical Department of the Navy, and their reports upon the proceedings of the association appear among the special reports.

The Association of Military Surgeons of the United States, as indicated by its title, was organized for the purpose of advancing and developing all that relates to the principles and practice of military medicine and surgery, and is limited in its membership to medical officers of the national services and the National Guard of the United States.

In compliance with the request of the president of the association (Brig. Gen. George M. Sternberg, Surgeon-General United States Army) the Department detailed Medical Director A. L. Gihon and Surg. J. C. Boyd to represent the Medical Corps of the Navy at the fifth annual meeting of the association, which was held at Buffalo, N. Y., May 21 to 23, 1895.

Their observations upon all matters of professional interest discussed at the several sessions of the association will be found among the special publications appended to this report.

SPECIAL REPAIRS TO HOSPITALS.

Naval hospital, Widows Island, Maine.—The history of this hospital was fully given in report of last year, with the recommendation that Congressional action be taken to dispose of the property as soon as it can be done on satisfactory terms, and the proceeds derived from the sale devoted to the renovation of such other naval hospitals as require to be placed in a modern sanitary condition. It is hoped that necessary measures will be taken to carry out this recommendation during the next session of Congress.

In the meantime minor repairs will continue to be made to keep the building in as good a state of preservation as possible. The removal of the flag staff has been authorized, owing to the constant strain on the roof caused by its being braced in garret and cupola.

Naval hospital, Chelsea, Mass.—It having become necessary to make extensive repairs to the roof, gutters, conductors, etc., of the hospital building, the work was authorized and will soon be completed. The furniture, bedsteads, etc., which had become old and obsolete have been condemned by survey and replaced by a complete modern sanitary outfit, and the hospital fully equipped for the accommodation of its full quota of patients.

Naval hospital, New York.—Since the Bureau's last annual report, and under authority granted by Congress to use $69,000 from the appropriation naval hospital fund of the sum accruing from the sale of New York hospital property, under act of July 20, 1890, to the city of Brooklyn, the contract has been given out and work commenced upon the repairs and improvements at this hospital, and also upon the construction of a retaining wall to properly protect Government property.

Plans and specifications relating to all the proposed changes were carefully prepared and submitted and advertisements for the work

authorized. Bids were opened June 8, 1895, but all of them were found to be in excess of the limit of the appropriation, as follows:

L. W. Seaman, jr., & Son, Brooklyn, N. Y.	$153,000
W. & T. Lamb, Brooklyn, N. Y.	148,870
Bernard Gallagher, Brooklyn, N. Y.	145,900
Telfer & Rennie, New York, N. Y.	138,560
K. A. Murphy, Brooklyn, N. Y.	132,200
Charles Hart, Brooklyn, N. Y.	127,735
M. Gibbons & Son, Brooklyn, N. Y.	126,775
Henry W. Otis, New York, N. Y.	117,340
P. J. Carlin & Co., Brooklyn, N. Y.	114,430

This excess over the amount authorized to be expended necessitated a change in the specifications, and new advertisements for bids were invited for all the work authorized except the new ward, estimated at $25,000, and specified in the act to be built of "same material" as main hospital building. The high bids before stated depended upon the exaction of a material that it was found impossible to obtain without great cost.

Bids under amended specifications were opened June 22, 1895, as follows:

Charles Hart, Brooklyn, N. Y.	$67,150
Thos. H. Stanley & Co., New York, N. Y.	63,300
K. A. Murphy, Brooklyn, N. Y.	59,900
Henry W. Otis, Kingston, N Y.	58,423
M. Gibbons & Son, Brooklyn, N. Y.	57,799
P. J. Carlin & Co., Brooklyn, N. Y.	54,900
J. M. Brosnan, New York, N. Y.	39,500

J. M. Brosnan, World Building, New York City, being the lowest bidder, was duly notified, and contract signed July 9, 1895. Work was commenced in conformity with the specifications July 17, 1895, and has progressed favorably to date, as shown by the weekly reports on file from the superintendent in charge of the repairs and improvements.

The first monthly payment under the contract was duly approved and paid on the 27th of August last.

It will be seen by reference to the above bids that it will be impossible, with the amount authorized by Congress, to build the new ward in conformity with the act of "same material as main hospital building." Permission has therefore been asked to substitute brick material for the ward authorized, and the use of $25,000 more of the money accruing from the sale of naval-hospital grounds to build a second ward, which will give the increased capacity desired.

There have been under treatment at this hospital during the past year 439 men and officers, far above the number that can be properly provided for, and showing the necessity of increased accommodations at once.

To prevent overcrowding during repairs of main building, 112 patients have been transferred from time to time to the naval hospitals at Philadelphia and Chelsea, and it will be necessary to continue such transfers until the capacity of the hospital is increased by the construction of the two additional wards proposed.

Naval hospital, Philadelphia, Pa.—The extensive repairs required on the north wing of this hospital to restore it to its legitimate condition have been completed, and the entire building has been opened for the accommodation of its full quota of sick. By the complete renovation of this part of the building ample space has been furnished to meet the wants of the station and the care of the sick required to be transferred from the naval hospital at New York.

Naval hospital, Norfolk, Va.—Extensive repairs are going on at this nospital in order to put the south wing of the building, which has been practically out of commission for years, in as good condition as the north wing, and to make it ready in every particular, by introduction of steam heat and electric lighting, and by renovating floors, windows, verandas, etc., for the accommodation of its full quota of sick, and equal to all emergencies liable to arise at any time. When this important hospital is fully equipped and modernized to a certain extent, it is believed, from the current appropriation for repairs, the entire building can be kept open, as it should be, for its legitimate work, and maintained in serviceable condition. The hospital wharf has been carefully examined and a survey requested for the purpose of determining its condition and deciding the following points, viz:

(1) Whether the wharf can be temporarily repaired, and the estimated cost of such repairs.

(2) If the wharf is considered beyond repair, an estimate for the construction of a new one.

Should either of the estimates submitted exceed the amount available under current appropriation, a special appropriation will be required to do the work.

GENERAL SANITARY RULES.

The necessity for a general system of sanitary rules in the Navy has been alluded to in previous reports. Valuable facts have been obtained through Department's circular letter of June 21, 1894, and the Bureau is now engaged in preparing a circular, embracing all points of interest in detail, as a guide for the prevention and spread of disease on board ship.

AMBULANCES.

As there remain two naval hospitals still unprovided with ambulances of modern construction $1,200 is asked to supply said establishments.

The three allowed under appropriation approved March 2, 1895, were designed with a great deal of care by a board ordered for the purpose, and were manufactured by the Abbott-Downing Company, of Concord, N. H., to be delivered at the naval hospitals at New York, Chelsea, Mass., and Norfolk, Va., at a cost just within the limit of the appropriation.

The two additional ones asked for are for use at the naval hospitals, Philadelphia, Pa., and Washington, D. C., where they are absolutely needed for the proper transportation of the sick and wounded.

The ambulance at Mare Island Hospital has been refitted and will answer the wants of the station for the present.

ANTITOXIN.

Information in relation to the new remedy for the treatment of diphtheria, gleaned from reports by specialists regarding the preparation, results of treatment, administration, cost, and production, warranted the Bureau in procuring samples of the Behring product as soon as it was available in market so as to have it in readiness for issue upon requisition of medical officers.

A sufficient supply was immediately furnished the medical department of the Naval Academy at Annapolis, Md., and the attending surgeons at Washington, D. C.

Upon the recommendation of the Bureau, P. A. Surg. F. J. B. Cordeiro, U. S. N., on leave in Berlin, was directed by the Department to

make a thorough investigation of the entire subject and the results obtained by its use in that city. His report is appended.

No cases of diphtheria appeared at the Naval Academy, hence no facts regarding its use were obtained. The attending naval surgeons in Washington used the remedy in two serious cases with most favorable results.

The New York City health department reports having employed it in more than 150 cases, and the mortality in cases thus treated has been about 12 per cent. Prominent physicians in that city who have used the remedy in a large number of cases of diphtheria and croup are earnest in their advocacy of the method, and claim the most gratifying and remarkable results, believing it to be no longer a theory but an established fact, and that no evil effects are observed to follow its use, even, as sometimes happens, when it fails to save the patient's life.

A complete report on the treatment of diphtheria and croup in France by means of hypodermic injections of diphtheritic serum has been made by the United States consul at Havre.

PASSED ASSISTANT SURGEONS.

The necessity of a physical, mental, moral, and professional examination for passed assistant surgeons prior to promotion to the grade of surgeon has been fully represented, and a bill for this purpose, introduced during the last session of Congress, will be brought to the attention of the Department at an early date.

BOOK OF INSTRUCTIONS.

The revision of the Book of Instructions for Medical Officers, so as to meet the requirements of the service, is receiving careful attention, and contemplates a uniform system of regulations for the administration of all hospitals and instructions relating to the care and preservation of roads, trees, buildings, grounds, and cemeteries. Specific instructions will also be issued relating to recruiting, inventories, requisitions, surveys, and sanitary reports, and methods to be observed in properly caring for microscopes and surgical instruments.

Special attention will be given to the subject of ambulance drills and the handling of sick and wounded ashore and afloat.

MEDICAL ASPECT OF THE CONSTRUCTION OF THE NICARAGUA CANAL.

Passed Assistant Surgeon Stitt, of the Navy, was detailed to accompany the Nicaragua Canal Commission on their recent visit, and directed to report upon the medical aspect of the construction of the canal. His paper on the subject is appended and will be read with interest.

HANDLING SICK AND WOUNDED;—AMBULANCE SHIP.

The proper handling of wounded on ships of war at the present day is a subject of great interest, and claims the attention of naval medical men throughout the world. Much has been written relating to different systems and many valuable suggestions made. The question was most ably discussed at the last International Medical Congress, Rome, Italy, and the Bureau invited reports bearing particularly upon all reasonable measures recommended for the safe and rapid transfer of the wounded during action.

More space should be allotted to the medical department on our modern vessels of war and every facility offered for the proper care of the sick and surgical treatment of wounded men. It is stated "that a battleship, with a complement of 500 men, in action, if not sunk, will have within a few minutes 30 killed and 120 wounded."

In the battle between the Chinese and Japanese fleets, off the Yalu River, September 17, 1894, the fragments of one shell fired at long range at the *Tsi Yuen*, killed 7 men and wounded 14. Commander McGiffen states in his account of the battle that 1 steel shell, having a bursting charge of 90 pounds of powder, struck the Japanese flagship and killed instantly 49 officers and men and wounded over 50.

It is regretted that the number killed and wounded by every shot on board the several vessels in the engagement can not be followed, for it would establish, approximately, the number of casualties probable in a naval engagement at the present day.

The figures given, however, must impress everyone with the gravity of the entire question and the necessity of making a commencement of better methods in the service. With this end in view a great deal of attention has been paid to the subject during the past year, and medical officers of the Navy have been requested to present to the Bureau their views regarding the subject. Valuable and instructive papers have been prepared on this question by P. A. Surgeons A. C. H. Russell and E. R. Stitt, and will be embraced in the list of special reports. The matter was brought to the attention of the Association of Military Surgeons of the United States at its last meeting by medical officers of the Navy, who offered suggestions and plans that in time should be adopted. A very simple method for transportation of sick and wounded on board vessels, when practicable, has been submitted by Passed Assistant Surgeon Stitt, and, with slight modifications, approved by the Bureau and adopted by the Department in General Order No. 452. It is hoped that this order will attract the attention it deserves and produce such criticism and suggestion from naval medical officers and others as will in time inaugurate a more perfect system.

The advantages claimed by General Order No. 452 are as follows:

(1) The moral effect of having contributed to the comfort and care of a comrade, instead of allowing him to remain lying where he was wounded.

(2) The ease and freedom from pain which this method of transportation along decks offers over that of supporting or carrying the man.

(3) The great rapidity with which the hooks of the bar can be snappped into the rings of the hammock, the man lowered, and the hooks disengaged upon reaching the place selected for the care of the wounded.

(4) The fact that a man can be lowered down any hatch which will allow the shipping of a ladder.

(5) The ease with which it can be guided in descent, and the impossibility of dropping the injured person out.

(6) When the injured man reaches the quarters assigned, he has his hammock provided and is not placed on the bare deck.

(7) The simplicity and cheapness of the bar, which can be made in a few hours on board any ship.

(8) Only two men are required to manipulate and lower it.

Attention has been called to "ambulance ships," and their use should be recognized by all nations for future naval wars. Such vessels should be specially constructed, of high rate of speed, or swift merchant steamers chartered and fitted up for the purpose, capable of following our

cruisers or fleets. Could the vessels of the Navy be increased by one "ambulance ship" built specially for the care of the sick and wounded, it could be used in time of peace as a training ship for the Naval Hospital Corps, which in time must be established, and should take part in squadron evolutions to practice the crews in transferring the wounded to her at sea.

It is believed that such a vessel, with a competent corps of surgeons and attendants on board, could render invaluable service, and by carrying the flag of the Geneva cross would have liberty of action and be respected and recognized by all civilized nations as on humane service. With a full equipment of boats, in like manner protected and available for duty, aid could be given in rescuing men from drowning in case a vessel is sunk in action.

Had either of the fleets in the naval battle off the Yalu been in possession of such a vessel the casualties by drowning caused by the sinking of the *Chen Yuen* would no doubt have been greatly decreased. The moral effect of the presence of a vessel of this kind, whose sole mission would be rendering aid to wounded and shipwrecked combatants, is evident.

Enough has been written to show that a vessel of this character is essential during and after battle to provide an asylum for wounded men, where they can be treated and cared for properly until transferred to a permanent hospital.

HOSPITAL CORPS FOR THE NAVY.

The necessity of an organized hospital corps for the Navy, instructed, drilled, and equipped for all duties pertaining to such service, was fully represented in the Bureau's last annual report. A bill with this object in view, combining every feature required to meet the immediate wants of the service, has been carefully prepared and will be submitted at an early date with sufficient arguments in favor of the measure to secure approval.

The general plan under consideration proposes a naval hospital corps, consisting of men enlisted for that special duty, and instructed from the beginning at preparatory schools for nurses; to be established at all naval hospitals, in order to qualify them for hospital work ashore and afloat, giving the Secretary of the Navy authority to enlist as many men in the hospital corps as the service may require, and to limit or fix the number, and make such regulations for their government as may be necessary.

Rates contemplated for this service are as follows:

(1) Hospital apprentice.
(2) Hospital apprentice, second class.
(3) Hospital apprentice, first class.
(4) Pharmacist.

It is provided that no person shall be enlisted and appointed a pharmacist in the Navy unless he be a graduate in pharmacy, or has served by continuous enlistment as hospital apprentice, hospital apprentice second class, and hospital apprentice first class, and, after designation by the Secretary of the Navy, shall have passed a satisfactory examination before a board of two or more medical officers of the Navy as to his qualifications for the position.

Precautions have been taken to avoid interference with those at present serving as apothecaries, except requiring all of them, whether ashore or afloat, to enlist as pharmacists; pay to be regulated by length of service.

It is not intended that instruction shall cease upon leaving one of the schools for nurses, but be continuous on board ship or station where transferred, and every opportunity given to apprentices of classes mentioned to prepare themselves for the position of pharmacist.

The pharmacist should hold the same relative position in the service as paymaster's clerk.

It is believed, with this incentive for promotion, regulated pay, and the benefit of such retiring laws as may be passed for enlisted men in the Navy after continuous and faithful service, that a class of young men far above the average will be attracted to the service for enlistment in the hospital corps and the Navy in the course of time provided with an efficient organization for care of the sick and wounded.

GENERAL SANITATION AND VENTILATION.

By a careful study of the relation of naval architecture to proper sanitation it is discovered that very little attention has been given to the subject in the construction of ships from the earliest times to the present day.

A paper has been prepared reciting the great advance in the science of naval architecture, and was presented for discussion at the last meeting of the Association of Military Surgeons of the United States, with a view of representing a complete history of the subject and the necessity of instituting practical measures for improving sanitation and ventilation on vessels of war. It is believed that the interest that is now being taken by the Department in the consideration of this important subject will result in methods that will vastly improve the living parts of the ship, and remedy, in a measure, excesses of temperature to which the working force of the ship is continuously subjected.

During the year fifty-five cases of heat exhaustion among the engineer force have been reported, the greatest number of cases appearing on the following vessels:

Bennington	11	Amphitrite	5
Bancroft	8	Raleigh	5
Columbia	6		

These figures are significant and merit attention by the Department.

The average temperature of the engine rooms of modern ships, under ordinary cruising conditions, may range from 106° F., with hatches large and open like the *Charleston*, to 152°, in badly arranged and closed ships like the *Amphitrite*.

In the fire rooms the average temperature under the above conditions may range from 124° in ships with only one set of fires in each fire room like the *Charleston*, to 189°, when the fire room is between two sets of fires like the *Cincinnati* and *Amphitrite*. In the case of the *Cincinnati*, when only one set of fires is used in each fire room the average temperature is reduced from 189° to 159°.

The result of these high temperatures, together with overwork and other trying conditions, is plainly shown by the number of disabilities in the engineer corps attributed to this cause.

Since January 1, 1894, 11 chief engineers and 3 passed assistant engineers have been or are now on sick leave, and of this number 6 have been recommended for retirement and 2 have died.

The health of the Navy, according to statistical tables appended, has been most favorable for the year 1894.

In concluding this report, I am pleased to state that all work coming under the cognizance of the Bureau during the year has progressed

favorably and satisfactorily, and many desired improvements have been made, all tending to the welfare of the sick and wounded of the Navy. All hospitals are being fitted with antiseptic operating rooms, elevators sufficiently large to remove patients from ward to operating room in wheeled stretcher, and disinfectors for sterilizing bedding, clothing, etc. A record of ambulance service has already been started.

Very respectfully,

J. R. TRYON,
Surgeon-General United States Navy.

Hon. H. A. HERBERT,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Medicine and Surgery, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
SALARIES.			
Chief clerk (appropriated, act of Mar. 2, 1895)	$1,800.00		
One clerk of class 3 (same act)	1,600.00		
Two clerks of class 2 (same act)	2,800.00		
One clerk of class 1 (same act)	1,200.00		
Two clerks (same act)	2,000.00		
One assistant messenger (same act)	720.00		
One laborer (same act)	660.00		
One janitor for naval dispensary (same act)	600.00		
One laborer for naval dispensary (same act)	480.00		
		$11,860.00	$11,860.00
MEDICAL DEPARTMENT.			
For surgeons' necessaries for vessels in commission, navy-yards, naval stations, Marine Corps, and Coast Survey, and for the civil establishment at the several naval hospitals, navy-yards, naval laboratory and department of instruction, museum of hygiene, and Naval Academy, $65,000 (appropriated, act of Mar. 2, 1895)	.....	65,000.00	60,000.00
The additional $5,000 is required to meet expenses incident to increased number of enlisted men and new ships going into commission.			
NAVAL HOSPITAL FUND.			
For maintenance of the naval hospitals at the various navy-yards and stations and for care and maintenance of patients in other hospitals at home and abroad, $20,000; that brick material be allowed for construction of ward at naval hospital, Brooklyn, N. Y., authorized by act approved July 26, 1894; for construction of a similar additional ward to increase needed capacity of hospital, $25,000, which sum shall be paid from that portion of the naval hospital fund accruing from the sale of naval hospital grounds to the city of Brooklyn and placed to the credit of the naval hospital fund in pursuance of the provisions of the act approved July 2, 1890 (appropriated, act of Mar. 2, 1895)	.....	20,000.00	20,000.00
CONTINGENT.			
For freight, expressage on medical stores, tolls, ferriages, transportation of sick to hospital, transportation of insane patients; care, transportation, and burial of the dead; advertising; telegraphing; rent of telephones; purchase of books and stationery; binding of medical records, unbound books, and pamphlets; postage and purchase of stamps for foreign service; expenses attending the medical board of examiners; rent of rooms for naval dispensary; hygienic and sanitary investigation and illustration; sanitary and hygienic instruction;			

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the Bureau of Medicine and Surgery, Navy Department—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
CONTINGENT—continued.			
purchase and repair of wagons and harness; purchase of and feed for horses and cows; trees, plants, garden tools, and seeds; furniture and incidental articles for the museum of hygiene, naval dispensary, Washington; naval laboratory, sick quarters at Naval Academy and marine barracks, surgeon's offices and dispensaries at navy-yards and naval stations; washing for medical department at museum of hygiene, naval dispensary, Washington; naval laboratory and department of instruction, sick quarters at Naval Academy and marine barracks, dispensaries at navy-yards and naval stations, and ships, and rendezvous; and for minor repairs on buildings and grounds of the United States naval museum of hygiene, and all other necessary contingent expenses, $30,000 (appropriated, act of Mar. 2, 1895).....	.....	$30,000.00	$25,000.00
The additional $5,000 is necessitated by same reasons mentioned under Medical Department.			
REPAIRS.			
For necessary repairs of naval laboratory and department of instruction, naval hospitals and appendages, including roads, wharves, outhouses, sidewalks, fences, gardens, farms, and cemeteries, $20,000 (appropriated, act of Mar. 2, 1895).....	.....	20,000.00	20,000.00
AMBULANCES.			
For supplying two naval hospitals with ambulances of modern construction to replace vehicles condemned as useless, $1,200 (appropriated, act of Mar. 2, 1895).....	.....	1,200.00	1,800.00
NAVAL CEMETERY, NAVY-YARD, MARE ISLAND, CAL.			
For labor and material for widening of approaches and repairing and painting all gates and fences, for making graveled roads and paths, building a wall at the foot of the upper terrace, properly grading the whole area, and planting appropriate shrubbery, $1,000 (submitted).....	$1,000.00	1,000.00	.....

REPORT

OF THE

COMMANDANT OF UNITED STATES MARINE CORPS.

HEADQUARTERS UNITED STATES MARINE CORPS,
Washington, D. C., October 11, 1895.

SIR: I have the honor to submit the following report of the condition of the United States Marine Corps for the past year:

Since the date of my last report I have made a personal inspection of the five northern stations, viz, Portsmouth, N. H., Boston, Mass., Newport, R. I., Brooklyn, N. Y., and League Island, Pa., as well as Port Royal, S. C., and found the buildings in as good a condition as could be expected. Various repairs are required at nearly all these posts, but as the items therefor, which were included in the usual estimates for the support of the Marine Corps, submitted on the 3d ultimo, have been stricken out by order of the Department, action thereon must be postponed until another year.

The discipline and efficiency of the men showed the careful instruction given by the officers, which was most satisfactory.

New barracks at League Island are much needed, as stated in my letter inclosing the estimates, and the enlargement of the living space for the enlisted men in the barracks at Boston, as recommended in the same letter, would much improve this post, as the sleeping rooms are now overcrowded, many of the men being obliged to sleep in double bunks, which is not conducive to health or comfort. This is an important post, the second largest on this coast, and owing to the naval prison being in this yard, which is under the charge of the commanding officer of marines, it is necessary to maintain a considerable force of men there. As the Department refuses to authorize the estimates for these two items, action must be suspended for the present, but I desire to state the necessity therefor.

The space of ground allotted for the Marine Corps at the naval station, Newport, R. I., is inadequate for all purposes, there being only 10 feet in rear of the barracks which the marines can use, and I respectfully recommend that the Department authorize the cession to the Marine Corps of about 200 feet additional in this direction, which will give ample room. This ground is at present unused, and would be available for outbuildings which are required there but at present impossible to erect.

The officer in command at this post is very uncomfortable by reason of the quarters he is obliged to occupy, which are spaced off from the enlisted men's barracks, and were only intended originally as a temporary expedient until suitable quarters could be erected.

The noise made by the men entering and leaving their rooms (which are immediately over the commanding officer's quarters, and separated by thin flooring) at all hours of the day and night can be distinctly heard and must necessarily prove very annoying, particularly in case of illness.

The time has come for quarters to be built, and it is regretted that the estimated appropriation has not been allowed to stand by the Department.

Officers' quarters are greatly needed at Port Royal, S. C., and Sitka, Alaska, as explained in the letter accompanying the estimates.

During the past year the number of men allowed the Corps has been continuously in service, and it has only been by the most careful and constant watching that the number has not been exceeded, and several times it has become necessary to cease recruiting altogether, which is the case at present. It is very easy to obtain the most desirable men, and if appropriation was made for 500 additional men they could be enlisted in a short time.

In this connection it again becomes my duty to lay before the Department the following statement regarding the insufficiency of the present strength of the Corps, and to urge in the most forcible manner that some action be taken toward increasing it at once. In spite of the fact that the Corps is up to its authorized allowance, duty on the men is very severe, and nearly everywhere they are on guard every other day, and have but little time for rest or recreation, and it is a matter of surprise to me that there are not more desertions, which I can only account for by the difficulty in securing employment outside and the care our recruiting officers exercise in the selection of applicants for enlistment.

The rapid strides made toward building the new Navy have long since demonstrated the need for additional men to man the ships, which resulted in the authorization of 1,000 seamen by the last Congress, and will doubtless be followed by an equal number when the next Congress convenes, as the vessels nearing completion must have crews, which at present it is not possible to furnish unless other and serviceable ships are put out of commission.

The same need for these men for the Navy exists in the Marine Corps, as it is necessary to furnish guards for all these vessels; yet no steps have been taken toward providing for them and at the same time alleviating the hardships which now result from the increased duties the marines are required to perform.

Commandants of stations and commanding officers of ships are continually asking for more marines, which requests I am unable to grant from paucity of numbers, and dissatisfaction as well as a continuation of the hard duty inevitably follows.

The Marine Corps has time and again demonstrated its usefulness to the country, both ashore and afloat, and that it is economically administered, and even with its reduced numbers it is to-day an efficient and well-organized body of men, but the limit of human endurance has about been reached and it will be impossible longer to maintain the present duty at the shore stations and on board ships and at the same time furnish guards for the new vessels of the Navy soon to be completed.

I have repeatedly made requests on the Department for an increase of men, but the urgency has increased day by day, and I trust that no longer delay will be countenanced.

I recently requested the commandants of the various shore stations to submit statements of the number of marines required to perform

necessary duties, allowing *only* two days off guard, which is by comparison with the Army very hard duty, but better than our men now have, and the following tabulated statement will show the answers to my inquiry:

Station.	Sergeants.	Corporals.	Drummers.	Fifers.	Privates.	Total.
Portsmouth, N. H	14	15	2	2	87	120
Boston, Mass	19	34	3	3	120	179
Newport, R. I	6	10	2	2	60	80
Brooklyn, N. Y	17	24	3	3	188	235
League Island, Pa	8	12	2	2	80	104
Navy-yard, Washington, D. C	9	10	2	2	75	98
Marine Barracks, Washington, D. C	12	12	3	3	100	130
Annapolis, Md	12	9	2	1	64	88
Norfolk, Va	10	13	1	2	93	119
Port Royal, S. C	2	3	1	1	41	48
Mare Island, Cal	19	25	3	3	210	260
Total	128	167	24	24	1,118	1,461

By the above statement it will be seen that these officers of the Navy, occupying responsible and important positions, in charge of millions of dollars' worth of Government property, for the protection of which they rely largely upon the marines, state, after the most careful consideration of the subject, the necessity for nearly 1,500 men on shore, which is 300 more than are at present doing that duty.

In addition to this number it is estimated that about 450 more will be required for the new vessels now under construction.

I think for the present, however, that an increase of 500 men will answer all purposes, and I have accordingly had prepared estimates for that number in the following proportion: 10 sergeants, 40 corporals, 12 drummers, 12 fifers, and 426 privates.

I ask that these estimates be added to the regular ones submitted last month and be considered in connection therewith, as an appropriation is all that is required to provide for these men, the legislation for their enrollment being already in existence, as section 1596, Revised Statutes, which has never been repealed, provides for 3,073 enlisted men.

I can not too urgently express myself on this, the matter of greatest interest to the Marine Corps at this time, and it is hoped the Department will not again disregard my earnest appeal for this absolutely necessary increase.

During the progress of the recent war between China and Japan the commander in chief of our naval force on the Asiatic Station found it necessary for the protection of American interests to detail the marines from the various vessels of his squadron for detached service on shore, particularly at the United States legation at Seoul, Korea, where the guards of the different ships alternated in the duty.

When rioting in Pekin became prevalent upon the approach of the Japanese army and it was feared the United States legation there was in danger, Capt. G. F. Elliott, the marine officer of the fleet, was ordered, with the guard of the flagship *Baltimore*, to embark on the *Monocacy*, at Tientsin, and hold himself in readiness with the guards of both vessels, amounting in numbers to 51 men, for service in the Chinese capital, if found necessary, which it was not.

Captain Elliott's report of his operations on this service, as well as his forced march by night to Seoul, a distance of 31 miles (some of which was through submerged rice fields), in eleven hours, is inclosed

herewith, and I request may be made a part of this report. It contains much interesting and valuable information, and I think will be of use to the Department.

The service rendered by Captain Elliott and his men, with whom were associated in Korea some officers and enlisted men of the Navy, was highly creditable, and this night march, made as it was in so short a time and with so many difficulties to overcome, was a noteworthy achievement and a severe test on the endurance of all who took part in it.

I inclose the report of the commanding officer of the School of Application for the past year, which shows in clear form the progress made there during that time.

His recommendations relative to a course of instruction at the ordnance shops at the navy-yard here and at the War College and torpedo station at Newport, R. I., for officers after completing their studies here and before final graduation meet with my approval and will be called to the Department's attention later in a special report, as will also his other recommendation, extending from three to five years the limit when the diplomas received at the school will be accepted by examining boards for promotion. A new class of three officers has now joined and is pursuing the course.

The report of the board of visitors at the closing exercises of last year's class is inclosed, and I would like to have it made part of this report.

Since my last report there have been 801 casualties in the enlisted strength, caused by discharges, desertions, deaths, and retirements, and in the same time there have been 804 enlisted and re-enlisted, and on this date the exact number of men allowed the Corps is in service. Desertions have been materially reduced during the past year.

There are 1,165 men doing duty at the several shore stations and 935 on board the various vessels in commission.

On January 20, 1895, Col. William B. Remey, retired, who for twelve years was Judge-Advocate-General of the Navy, died after a long and painful illness, which originated before his retirement.

Capt. James Wiley and First Lieut. James A. Turner, both also on the retired list, died under date of July 7, 1895, and January 23, 1895, respectively.

Second Lieut. Walter Ball resigned March 7, 1895, to accept an appointment as assistant engineer, United States Navy, exchanging with Assistant Engineer John T. Myers, U. S. N., who, on March 18, 1895, was appointed a second lieutenant in the Marine Corps, and is now under instruction at the School of Application, together with Second Lieut. L. J. Magill, who was appointed from the last graduating class at the Naval Academy, and First Lieut. T. N. Wood, the senior of his grade.

A triplicate of the annual estimates of the paymaster and quartermaster, revised as ordered, is also inclosed.

Very respectfully, your obedient servant,

CHARLES HEYWOOD,
Colonel Commandant.

The SECRETARY OF THE NAVY,
Washington, D. C.

REPORT OF CAPT. G. F. ELLIOTT.

MARINES IN SEOUL, KOREA.

The treaty between China and Japan, known as "the treaty of Tientsin," contained an agreement that neither country should land troops in Korea without due notification each to the other.

In the month of June, 1894, the U. S. flagship *Baltimore* was ordered to Korea to watch proceedings and give a feeling of security to the numerous missionaries living in the capital, Seoul, some 26 miles from its seaport, Chemulpo.

Chinese and Japanese fleets were constantly steaming into the harbor, anchoring, and moving out, evidently watching each other's movements.

Early in July the Chinese landed 4,000 soldiers 16 miles south of Chemulpo, at a small village called Ahsan, and went into intrenched camp, which was inland sufficiently to be out of range of navy guns.

As soon as this move on the part of the Chinese was positively known, the Japanese landed in light order 300 sailors from the fleet, hired Korean coolies to carry supplies and baggage, and attempted a night march to Seoul. The roads being bad, they did not reach there until evening of the next day. They remained in charge of their legation in Seoul for about ten days, when they were relieved by the Japanese troops. Why they did not go by the river in their boats was never satisfactorily answered.

Within a week after the sailors had occupied Seoul, transports, convoyed by Japanese men-of-war, disembarked 6,000 infantry, a single horse battery, rapid fire guns, and 240 cavalry. All were landed from sampans on the single mole rapidly, without noise, confusion, or loss of any kind. They were beautifully equipped in all the necessities for field service. The cavalry were a picked body of men; their mounts, stallions, about 15 hands, vicious and not up to hard work. All had a peculiar flatness of the flanks that I have never noticed in horses of any other country.

On July 23 telegrams urgent in tone were received on board from our minister in Seoul asking for a guard to protect the legation, also stating that the Japanese had seized the palace and King the night before after a small skirmish, in which 40 Koreans and 3 Japanese were killed or wounded.

A detail of 2 ensigns, a cadet midshipman, and assistant surgeon, the paymaster's clerk, 21 marines, and 29 sailors was made to proceed to Seoul by boat at 4 p. m. the next day. At 7 p. m. the only pilot procurable had not returned from up the river, and for this reason we did not expect to be able to start the next morning.

The weather was extremely hot and the atmosphere filled with humidity. It was the opinion of officers on board that the march to Seoul could not be made in a night and that a march by day would endanger the lives of men.

Believing at the time that a guard was urgently needed, I stated my views and said that I felt certain that the marines could make a night march of it with 60 rounds of ammunition and three day's rations.

At 7 p. m. received an order from the commanding officer to proceed to Seoul. At 8 p. m. left the ship; landed at 8.45 p. m. As the Japanese occupied and patrolled the roads, their consul was asked to furnish a guide, which he willingly did, and we received only courtesy from their many small posts on the way.

The road was little more than a footpath for pack animals and varied in every degree of wretchedness, over clay hills, a mountain pass, 3 miles of deep sand, with two good-sized streams to ford. The night was extremely dark, hot, and sultry. The distance was added to in order to avoid a Japanese division on the move for Ahsan, where the first land fight of the war took place three days later. This divergence took us through 3 miles of rice fields without a road, and the entire distance of 31 miles was made in eleven hours. As the men had not drilled on shore for a year, they were severely taxed, but there was no straggling.

After crossing the river 3 miles from Seoul we met many fugitive Koreans fleeing from the city with their women and children. Over 100,000, it is said, deserted the city for the country. On seeing us they always hastily deserted the road. On entering the south gate not an inhabitant was to be seen. The houses were all closed, and the market place, usually thronged at this hour, was entirely deserted. The gates of the city were heavily guarded by Japanese infantry. The gates of the legation were also closed, and there were some Korean refugees of rank housed in the compound.

At 2.30 a. m. Ensign Heyward reported for duty, having with him 2 subalterns, an assistant surgeon, an acting paymaster, and 29 sailors. They had marched some 3 miles from the river. Two of the men were in the hands of the surgeon from sun collapse. One of these returned to the ship two weeks later still on sick report.

Two old quarter-deck awnings, two boat stoves, and the paymaster's stores having arrived, the men were soon sheltered in two tents. A cook house was erected and

sinks dug. Later board floors, mosquito nets (purchased by the men), a bath house, and other luxuries made the camp as comfortable as the extreme heat would allow.

The legation compound is very small—about 140 yards long by 100 yards wide, is surrounded by a wall varying in height from 6 to 10 feet, contains two good wells, and is situated between the English and Russian legations, the three occupying a ridge which slopes gently to the south and abruptly to the north. The legations face south and are entirely surrounded by the one-story Korean hovels. Buildings in the American compound, viz: Minister's house, brick, of one story; secretary's house, same, but smaller; a small Korean cottage occupied by the officers; legation office, old Korean cottage, large enough for 20 men in summer; a new building put up at the minister's expense, 45 by 16 feet, called marine barracks, and a few sheds for the many coolies employed as servants.

In spite of the hot weather and contracted space the sinks were kept free from all disagreeable odors by the free use of quicklime and very little earth thrown in twice a day.

Sentinels were established at both gates and at advantageous points to protect the legation, also in the lane connecting the English and Russian legations with the American. At the earnest request of missionaries a patrol at night made rounds through their compounds, which were situated within hail of the guard in the legation.

Through courtesy, needed supplies were sent up from the *Baltimore* in a small steamer purchased from a Chinese merchant by the British chargé d'affaires. He requested through our minister that I furnish a quota of sentinels to guard a storehouse where the boat landed. This I was obliged to refuse, and thereafter our own steam cutter made necessary trips.

Up to the 26th of August no man left the compound. All thoroughly understood the situation, that the Japanese garrison had been depleted to 300 men in order to send troops to Pingyang, and that in case they were defeated their legation would probably be attacked in Seoul. An event of this kind would endanger the lives of all foreigners, for there is a strong party of Koreans whose cry is Korea for Koreans; also a religious sect of fanatics calling themselves Tonghaks, organized to do away with Christianity; but the term is now generally applied to rebellious Koreans. This belief proved to be true, for a letter written by the King's father, the old regent, to the commanding Chinese general in Pingyang, stated: "You gain a victory and I will stir the foreigners up here in rear." The regent was confronted by this letter in the hands of the Japanese minister in Seoul later, and admitted he wrote it, and for this lost most of the power to which they had restored him.

The conduct of the men up to August 26 was exemplary in the extreme. Money was served out after this, and they were allowed liberty until 6 p. m. (when they could be spared). Temptations to smuggle liquor were offered by Koreans constantly. Still there were but few cases of drunkenness or overstaying liberty. Their general conduct was good, and, although they would have been glad to get back to the ship, I never heard a complaint.

I was relieved on the 26th of September by Lieutenant Gill, U. S. N., from U. S. S. *Concord*, in command of a detachment of marines. Ensign Heyward and Assistant Surgeon Morris were detached from my command and reported to Lieutenant Gill for duty. We joined the ship on the evening of the 27th of September, making the trip down the river in ships' boats towed by steam launches in eight hours.

PORT ARTHUR.

Pingyang having been taken, the Chinese garrison fled to the northern portion of the peninsula of Korea. The roads leading north through the country were so contracted and difficult that it was almost impossible for the commissariat to supply the Japanese army, its means of transportation being an organized corps of coolies.

As the Japanese paid cash—600 to the silver yen—for everything used or taken in the country, even to firewood, the transportation of money became a very serious difficulty. To lessen this in a degree they forced the Koreans to make use of their idle mint and coin silver and copper.

The Chinese army had halted in its flight from Pingyang on the Yalu River, and it was evidently the intention to collect a larger land force here than they had yet put into the field to recover Pingyang and eventually to capture Seoul. Stores and transports were to be conveyed by their fleet to the mouth of the Yalu.

A counter stroke by the Japanese on Port Arthur would keep this army from moving south, or at least from receiving succor by water. This could only be done by landing a fresh corps in transports within easy striking distance of Port Arthur and attacking on its land face.

The naval engagement known as the battle of Yalu was risked and fought to accomplish this. Although not actually decisive, the Chinese fleet was so crippled

that a corps was embarked in transports, landed, and took the fortifications protecting Taliwan Bay, 25 miles from Port Arthur. This place was given up almost without defense, and its splendid armament of modern Krupp guns left intact.

General O Yama, having established a base at Taliwan Bay, moved on Port Arthur, 25 miles distant. A large Chinese column attempted a sortie on the 18th or 19th of November, but was turned back by the fire of a single battery. It is probable that an assault by the Japanese would have been entirely successful at this time, but their attack was not hurried.

The Japanese army, numbering 20,000 men (about 15,000 actually participating in the fight), was divided into two columns. The right, the main assaulting division, under the direct command of General O Yama, and a mixed division of 3,000 infantry and a battery, under command of a lieutenant-colonel, the left. The two divisions were not actually in touch, but were separated by more than a mile.

The outer line of defense, about 4 miles in length, stretched across this narrow peninsula, and was about the same distance from Port Arthur, the inner line about 2½ miles distant.

The contour between these lines was a mass of steep, rocky hills, varying from 200 to 600 feet in height, separated by narrow, tortuous valleys, deeply seamed with dry gullies, the prevailing color presented to the eye being a grayish brown. Stunted bushes of oak and small pines sparsely dotted the hillsides.

A chain of ten forts on the crests of the hills had mounted modern ordnance. The forts supported each other in flank; had lines of rifle pits along the ridges connecting them.

A magazine in one of the principal forts was blown up by shell fired from a field battery, and the infantry were said to have assaulted in fine style. The second Nangoya regiment broke through on the Japanese right and poured over the hills into the town. They were closely followed by the head coolies of the commissariat department, who were armed with Japanese swords. Some hundreds of Chinese soldiers were within the village; they had shed their uniforms, and were dressed in the blue blouse of the coolies. The second regiment had seen a day or two before the heads of a lieutenant and two soldiers (belonging to them) stuck on poles by the wayside, and their bodies horribly mutilated. I was told by a Japanese captain that the Chinese had fired on them when they entered the village. However this may be, the Japanese soldiers shot and the coolies slashed with the old sword of Nippon about 240 in the streets and houses of the village.

The mixed division, forming the left, did most of its fighting, carrying the inner line of rifle pits on their left, broke through, but were halted before reaching Port Arthur.

The Chinese army, some 13,000, were allowed to retreat around the Japanese left, crossing their line of communication with Taliwan Bay, and escaped up the Laotong peninsula.

The allowing Chinese armies to escape was a policy pursued throughout the war; to parole them would be a farce, feeding and holding them as prisoners an expense. As Chinese soldiers were little more than coolies, the number captured could not affect numerically the fighting force of three hundred millions of people.

News reached the U. S. S. *Baltimore* at Chefoo on the 23d of November that Port Arthur had fallen on the 22d of November at 2 p. m., and that night we sailed, anchoring 3 miles from Port Arthur at daylight on the 24th.

At 7.30 a. m. a whaleboat containing three naval officers and myself left the ship with directions to ask General O Yama's permission to visit points of interest within the captured port.

Japanese steam launches were engaged in removing torpedoes, one or two of which exploded while we were en route, and though not in close proximity, they gave a nasty shock to the boat. The wind having died out one of the dragging launches towed us into port, avoiding buoys, either placed on discovered mines, or dummies placed by the Chinese.

The entrance to the harbor is very narrow. On the starboard hand a hill 656 feet high, rising almost like a bluff from the water, was crowned with a heavily armed citadel, and on a lower level several batteries in barbette; the guns were modern Krupp. This hill breaks off in almost a perpendicular cliff, forming the starboard shore of the narrow entrance. Its reverse side from the sea is so steep that a fine military road, cut and walled with faced stone, V's to the citadel. It is a natural traverse for the dockyard and the little village situated directly behind it.

The entrance is little over 100 yards wide; the port shore slopes more gradually from the water, but its angle not far from 45°. Its summit, some 500 feet high, was fortified, having mounted in barbette two 24-centimeter Krupp guns. Numerous batteries dotted the hills on the right and left.

The channel bears to starboard just after entering, so that the dockyard is masked from gun fire at its entrance. The harbor is about half a mile long; at its head, cut at right angles to it on the starboard shore, is a basin faced with cut granite. This

basin is about 600 yards long by a little more than 100 wide. Facing its head on the right is the dockyard proper, having machine and work shops of various kinds, a fine pair of iron shears, connected with them a hoisting engine; also numerous storehouses. Opening into this basin near its head is a fine stone dry dock for large vessels; also a small one for torpedo boats. On the left of the basin was the coal pile, about 20,000 tons.

Landing in the dockyard, it was noticeable that nothing had been destroyed by the retreating Chinese. A torch properly applied would have left nothing except the dry dock and coal pile.

General O Yama courteously received us, and ordered his chief of staff to give us such aid as we needed in visiting points of interest. Wishing to see the land defenses rather than the heavy sea batteries which had not been engaged, a captain of artillery was sent with Lieutenant Halsey and myself to visit the battlefield. We moved out to the northeast, over a dusty, barren plain, much cut up with dry water courses. On the road we passed a few Chinese soldiers who had been slashed with the sword; the neck was usually severed by a single blow. In some instances half-starved hogs and miserable dogs were feeding on these dead.

About 2½ miles out the plain ended. A rather steep range of hills formed its boundary. Following, and just below the crest of these, we could see a long line of the red and white uniforms of the Chinese infantry. For a time we believed the soldiers of the Celestial Empire had marked a single modern battlefield with glory, but the uniforms had all been shed before the fight began.

On the crest of the hill was a line of rifle pits, peculiar in construction. It consisted of a series of holes about 2 feet deep by 2 in circumference, about a foot apart, the earth being thrown to the front. Planted in this was a flat slab of stone, when it could be procured, or else a number of smaller pieces were set together. The earth covering it prevented the splashing of lead when a ball struck. The new earth was hidden as well as possible by twigs cut when the leaves were on.

A few men had fallen in their pits, but the majority that stood had evidently huddled through fear or that desire that men have for company in time of danger. It was not from discipline or drill, and little groups had fallen together as the Japanese broke through.

Five kinds of ammunition of as many calibers were found on the line. Cartridges were laid loosely by the pits, and were scattered all down the hill, thrown away in flight. Empty shells were few in proportion.

The Japanese had assaulted up hills so steep that it was difficult even to walk up unencumbered, and they must have been exposed to the fire of 37-millimeter Hotchkiss and rapid-fire guns, well placed in earthworks having commanding positions.

The Japanese killed had been buried and their wounded removed to hospitals. Captured prisoners under sergeants' guards were digging shallow graves in the hard soil and forcing the stiffened bodies of their dead comrades into them by the free use of the spade and poles.

Whether the Chinese wounded were removed to hospital or not I do not know. There were none but dead on the field, but they had all fallen by the bullet or shell.

The entire line was not assaulted, but the point described answers for a description of all the points taken. I do not think there could have been more than 400 dead; probably 1,200 killed and wounded is a fair estimate.

Crossing the main road leading to Taliwan Bay we met a body of Chinese coolies willingly carrying the loads of Japanese coolies for a very small stipend; the fight was not theirs. On our return we visited the village and inspected the dockyard, leaving for the ship about half an hour after sundown.

GUARD DETAILED FOR PEKING.

The *Baltimore* arrived in Nagasaki on November 29; there found a telegram ordering the marines to Tientsin, to be held at the call of the United States minister in Peking as a guard for the legation there if needed.

The *Baltimore* was coaled, and we sailed for Chefoo on December 2, arriving at 7 p. m. on the 4th. Entering the harbor just before us was the British steamer bound for Tientsin. The paymaster boarded her and secured passage for 3 officers and 42 men. The accommodations for the latter were poor in the extreme. We left the *Baltimore* at 8 p. m. and sailed at 10 p. m., arriving off Taku Bar the evening of the 5th.

There were several steamers before us unloading in lighters, and our steamer was obliged to await her turn. We had left Chefoo hurriedly, so that there was a lack of rations for the men if detained. Everything had been eaten up on board at breakfast the morning of the 6th except flour in barrels, and there were no means of cooking this for so large a number.

There was every indication of a blow coming up; in that case it would be three or four days before we could communicate with the shore. Added to this was the

danger of the river freezing up, which usually occurs by the 10th of December. Taking this into consideration, I determined to take the men to Tientsin by rail, 32 miles.

I was well aware I had no right to land an armed force without permission in a foreign country, but it was impossible for me to get this permit within necessary time, so I embarked the men and baggage on a tug at 1 p. m. After crossing the bar and steaming about 10 miles, we entered the Kiho River, the mouth of which is fortified by large concrete and mud forts on both sides.

As soon as we were well in sight of the forts numerous trumpets sounded "to arms," and the Chinese garrison manned the guns. They went through the form of loading them—may have actually done so. However, we were allowed to pass unquestioned, and landed 6 miles above the forts at a coal dock, 500 yards from the railroad station. There I left Ensign Belknap with 10 men to guard the baggage, and marched the remainder to the depot. Curiosity had collected a motley crowd of dirty natives, coolies and soldiers about us, numbering not far from 500. They pressed in so closely that it was necessary to place the men back to a wall and put in front numerous sentinels to keep off the press. The sentinels, losing patience, would now and then give vicious blows with the butts of their pieces, which soon had a good effect.

The men stood fully equipped from 3.30 p. m. until 6 p. m., when the train pulled up, having next to the engine two coal floats for our transportation. Ensign Belknap had his detail and baggage on board. The thermometer was much below freezing and the wind coming over the ice fields biting.

We were obliged to use the open floats, as Chinese soldiers traveling in the American style of passenger cars had made their floors a foul sink. The men danced and thrashed themselves to keep from freezing, and after an hour and a half we arrived at Tientsin, crossed the river, and reported on board the U. S. S. *Monocacy*.

Moored alongside of the bund was a gunboat of each of the following nations, viz, American, German, English, Russian, and French; also guards of marines or sailors held for duty in Peking if wanted, viz, 51 American marines, 50 English marines, 50 German sailors, 50 Russian sailors, 50 Italian sailors, 32 Spanish marines.

Preparations were being made by the commanding officers of these guards to get their men properly equipped for the extremely cold weather of winter. Long sheepskin coats, fur caps, and gloves were purchased at Government expense by the various nationalities for their men. In case of the American marines' they had to pay for their coats themselves $3.50 in gold, and these were absolutely worthless to them in the spring. The strong smell of wool prevented their being stored on board ship.

All guards were expected to be ready to start for Peking, 86 miles distant, by December 15, but an edict forbidding them to enter the city was issued by the Emperor.

Everyone believed that this edict would be rescinded, and in order that the men might be in proper physical condition to make this march in four days or less, the American marines were marched daily without regard to weather (there being no rain) about 7 miles, drilling in the afternoon when the weather was good. The German sailors were the only other body of men who marched regularly, and were trained systematically.

When the river froze and steamer communication was cut off, the streets of Tientsin were barricaded, and the commanding officers of vessels had at least an understanding what was to be done by each command in case of riot, fire, or disturbances. Rumors varying in the sensational was the daily order of things.

Knowing if the Japanese saw fit to make an attack on the Taku forts, 32 miles down the river, or at Shanhaiquan, 170 miles to the west, connected by rail with Tientsin, that guards would be called to Peking, and that it would be impossible to procure carts for the transportation of stores, three months' rations for 50 men were sent and stored in the legation.

In February I received an order from the commanding officer of the ship, by direction of the admiral, to proceed to Peking to confer with our minister, Colonel Denby, in regard to making arrangements for housing, feeding, etc., the men, and to see what the missionaries intended to do, provided the Japanese landed in the Pichili district and moved on Peking.

After these orders were issued the commanding officer held them for a week, as foreigners had been molested en route, and Chinese soldiers had robbed the banks (money lenders) in the town through which I had to pass. Twenty-five thousand Chinese soldiers were encamped along the route, beginning 20 miles from Tientsin and ending 16 miles from Peking.

It took two days to make this disagreeable trip on horseback. Chinese camps lined the road; they were usually surrounded by a wall made of mud mixed with straw, about 16 feet high, castellated for ornament, having a single arched entrance. Their use was to break the cold winds and keep men from wandering out of camp—

did sentinel duty. Bodies of troops met on the move were armed with all manner of weapons. Tower muskets, gingals, Remington rifles .50 and .45 caliber, German carbines, Grass magazine rifle caliber 30.03, bamboo poles with a small flag and spike, tridents, swords with handles 4 feet long, etc. And I saw 1,000 muster to pay honor to Li Hung Chang, who was supposed to be on his way to Peking, who were unarmed. I do not believe that these troops so near Peking had a single cartridge, but of this I am not certain. Cartridges would be served out when they started for the enemy, so straggling privates of different regiments stated.

I called on our minister, Colonel Denby, and showed him my instructions. He was not only personally courteous, but interested himself in aiding me to carry out my orders.

The American legation compound is less than an acre in area and is badly cut up with buildings, none of which was fit to house 50 men. Besides, the great wall of the city, 60 feet high and parapeted, was within 100 yards of the compound. This allowed it to be enfiladed by rifle fire, which made it necessary to look for other quarters.

The Methodist mission was visited, a mile distant, a compound of 9 acres, but this was situated under the wall and removed from support of the other legations, which were grouped. I found two strong houses on Legation street well suited. They were in charge of Sir Robert Hart. Called on him with our minister in regard to them; received a note the next day regretting that it would be impossible to let us have them, as they were Chinese property. Finally secured the Dutch legation, which was vacant at the time, a compound suitable in every way. Paymaster Cowie made all arrangements necessary in case of occupation, even for having a distiller put up, as all water in the city is strongly alkali, cistern water being very limited.

At Colonel Denby's request I visited the six American missions, which necessitated a cold ride of 16 miles within the walls of the city. A report has been made to Admiral Carpenter in regard to the situation in Peking at this time and the probable results of a move on Peking by the Japanese.

The Emperor of China for the second time gave an audience to the foreign ministers, the occasion being New Year's. Paymaster Cowie and myself acted as military attachés to the American legation.

The day before I returned to Tientsin Prince Lung, the Emperor's uncle, called on Colonel Denby, begging him to act in the name of the Emperor to the extent of drawing up a request to the Japanese authorities asking them to receive a peace commissioner. Pending these negotiations our minister did not wish a guard in Peking, and I left with the understanding that the guard would not leave Tientsin unless the Japanese transports appeared off the coast or the commission failed.

Had the Japanese landed in the district of Pichili, 150,000 Chinese soldiers would have been defeated, and an immense rabble of armed men swarming through the country would have made the best of their way home, and there was not a haversack in the Chinese army.

Peace having been declared on May 10, we were ordered back to the *Baltimore* May 16. I left 5 men behind to fill vacancies on the U. S. S. *Monocacy*. Proceeded by merchant steamer to Chefoo, and there embarked the marines on the U. S. S. *Yorktown* and U. S. S. *Concord*. and arrived in Nagasaki May 20 and joined the U. S. S. *Baltimore* on that date.

Very respectfully,

G. F. ELLIOTT,
Captain, United States Marine Corps.

ADDENDA TO CAPT. G. F. ELLIOTT'S REPORT.

The quiet, soldierly discipline of the Japanese troops astonished all foreign officers who had the opportunity of observing them while disembarking, on the march, occupying camps near, or while billeted in cities not their own.

In 1870, in obedience to an edict of the Mikado, the Diamios mustered their Samuri. and each and all of the 2,000,000 hereditary soldiers of Japan laid by their swords in a day, and the privileged class became of the people. The feudal system which had defended the country, closed it to foreigners, made invasions, and filled Nippon for hundreds of years with chivalry and oppression, ended.

The country was defenseless, having neither army nor navy, but the progressive party immediately took steps to create both, modeled after those existing among enlightened nations.

Army officers of good standing from America, France, and Germany were employed to instruct, organize, and drill the new defense, but no system was adopted until from observation the German was preferred, and the Japanese army is now modeled with slight and suitable changes after that country.

Casual observers, though military men, are apt to credit the iron discipline adopted from the Germans with creating in less than twenty years an army thoroughly equipped, proficient in drill, and possessing in the highest degree that discipline which gives unquestioning obedience and patient endurance; but these latter qualities already existed in the sons of the Samuri, and soldiers not belonging to this class were leavened by them; besides, for the first time in the history of their country, they were allowed the privilege of fighting for her. These two conditions had more to do with their high standard as soldiers, in my opinion, than the system adopted.

Japanese infantry regiments are homogeneous physically; the men do not vary more than 2 inches in height, seven years in age, or more than 20 pounds in weight. In the field they are not burdened with over-fleshy men, neither with the "faithful old soldier," whose pride has outlived his strength. Forced marches did not leave a fourth of the regiment straggling in the road, and the endurance of the men could be counted on nearly as a unit.

Undoubtedly they are brave, but have not been tried in large bodies up to a demoralizing loss, although small parties on one or two occasions were cut off and fell together like true soldiers. Whether they will take a panic under heavy reverses is not known.

They are fairly well set up, but do not show it as much as the regular foreign soldier, good weight carriers, but I believe slow marchers, although for short distances they get over ground very rapidly on a trot, having what is known as "good wind." Drill has in a great degree eliminated the native peculiarity of being pigeon-toed. In marching they step too much from the knees and do not move out from the hips; this I think is due from the use of the Kimona in early life.

Uniform and equipments.—The cap is of dark-blue cloth, German in pattern, having a small drooping visor, a 2-inch band of yellow braid and the imperial chrysanthemum crest for ornament; it is heavy and ugly, but is the universal headgear. The coat is of dark-blue cloth, of roundabout pattern, single-breasted, having one row of good-sized buttons, a standing collar faced in colors to denote the regiment; a shoulder strap of the same color has worked upon it in silver bullion the regimental number. For winter dark-blue cloth trousers, and for summer white cotton duck. Overcoat of German pattern, dark-blue cloth.

All rifles are made at the arsenal in Tokyo, and are called by the inventor's name Murata. They are of two patterns. The one used by the great majority of troops was a single-loading bolt gun of .44 caliber, sighted to 1,400 meters, without wind gauge; the other a magazine gun of .315 caliber. The stocks are very short and the cheek wide. The cartridge box is of leather, holding about 45 rounds, about 4 inches deep, so as to allow the hand to enter it readily. A small bottle with screw stopper is made into it at one end to contain oil. The belt, of heavy black leather with a tongue buckle. The knapsack is of russet leather; a pocket at one end holds the blade of the Linnamen intrenching spade, the handle of which projects above the soldier's left shoulder when the knapsack is slung. The blanket was of sky blue and when rolled was strapped on top and down each side of the knapsack. An extra pair of shoes was also strapped on each side, soles out. Just below the flap on the back was strapped a tin box shaped like the case of a pair of binoculars; this was the haversack, and was used for eating from and carrying boiled rice. There was a tray for tea, etc. The water bottle was of glass covered with leather.

Cooking in camp was done for the company at kitchens, large iron pots being the only utensils. Boiled rice took the place of bread, tea, beef, when it could be purchased, and dried fish brought from Japan formed the ration. I think the cost of a single ration per day was 3 cents, gold.

While in Tientsin, China, I visited several times the hospital under charge of Dr. Irwin, surgeon to Viceroy Li Hung Chang. Wounded Chinese soldiers were treated here during the winter. Surgeon Major James, of the British army, had charge of some of the wards, and was much interested in wounds made by the small-caliber enveloped bullet. He kindly gave me every opportunity to see, and much information in regard to these wounds. I saw about thirty of the wounded; in no case were bones shattered to any extent, even at the exit of the ball; the puncture was clean; no bullet was found in the patient, so the casing was unknown, whether of steel or a softer metal. They did not seem to deflect on striking, but cut their way through in the line of flight. Thirty patients testified they had received their wounds at distances varying from 150 to 400 yards. They healed readily, often by first intention. None of the wounds were in the leg, for the men had made their own way from the battlefield on foot, and in carts, to the railroad, more than 200 miles, and were several weeks on the road. All suffered more from frost-bitten feet than the bullets. Out of the thirty cases I saw, I think probably the old .45-caliber lead ball would have left on the field nine of them dead.

REPORT OF THE SCHOOL OF APPLICATION.

SCHOOL OF APPLICATION, UNITED STATES MARINE CORPS,
Washington, D. C., October 1, 1895.

SIR: I have the honor to submit the following report of the School of Application for the year ended June 30, 1895:

The classes were organized September 1, 1894, on which date the following student officers reported for duty, viz, Second Lieut. William C. Dawson. Second Lieut. Theodore H. Low, Second Lieut. Walter Ball, Second Lieut. Austin R. Davis, Second Lieut. John H. Russell, jr., Second Lieut. Charles F. Macklin, and Second Lieut. Thomas S. Borden. These officers, seven in number, were members of the class of naval cadets that had completed the prescribed six years' course in June. The enlisted men selected for instruction had joined late in August and were in readiness to take up their studies when the term opened. They numbered 5 sergeants, 3 corporals, and 10 privates. The classes, as heretofore, were organized into two divisions—the commissioned officers' division and the enlisted men's division. Earnest and intelligent effort characterized the manner in which the work of the year was performed by the members of both divisions, all of whom, with two exceptions—Lieutenant Ball, resigned, and Private Hyde, relieved—pursued the course with success and credit.

First Lieut. Joseph H. Pendleton joined the post August 23, 1894, and was assigned to duty as instructor of the commissioned officers' division, taking the place of First Lieut. H. K. White, who had been detached for service afloat. Second Lieut. Rufus H. Lane, a member of the last class, was retained at the school as instructor of the enlisted men's division, relieving First Lieut. W. C. Neville, and remained throughout the term, at the close of which he was detached and ordered to sea.

Second Lieut. Walter Ball, a member of the commissioned officers' division, severed his connection with the school and the Corps March 8, 1895, having been transferred to the Engineer Corps of the Navy as an assistant engineer, exchanging with Asst. Engineer John T. Myers, United States Navy. Asst. Engineer John T. Myers, United States Navy, having been transferred to the Marine Corps as a second lieutenant, joined the school for instruction March 18, 1895. Lieutenant Myers did not take up the theoretical studies owing to the fact that the class had about completed the course at the date of his joining. He was assigned to practical work and retained at the school to enter the next class.

While work in all departments of study was exceptionally good, the practical exercises in topography are deserving of special mention. In this department parties were organized and sent out from time to time to make reconnaissance of the neighboring country, the conformation of which is sufficiently diversified to offer a good test to the knowledge of the students in field work. These reconnoitering parties made very creditable reports and sketches and showed a thorough comprehension of the principles that govern the making of hasty surveys and the collecting and recording of data necessary for military operations. The plotting of campaigns in connection with the study of the Operations of War (Hamley), in which much original work was done, showed an intelligent understanding of the subject and a high degree of merit in the art of map drawing.

Much valuable information was acquired by visits to the ordnance shops at the navy-yard here, where every opportunity was afforded for the study of gun construction. The naval proving grounds at Indian Head were visited on occasions when trials of special importance were to take place, and the student officers were thus enabled to witness some interesting trials of guns and armor.

Among notable events during the course were the lectures delivered before the commissioned officers' division by Lieut. Lincoln Karmany, staff intelligence officer, and Lieut. Charles H. Lauchheimer, assistant to the Judge-Advocate-General. Lieutenant Karmany spoke on "Modern small arms," a subject in regard to which he is a recognized authority, relating in detail the history of the development of the infantry arm and pointing out the merits and defects of prevailing types. Lieutenant Lauchheimer's subject was "Naval law and procedure," in which was explained the duties and responsibilities of members of courts, and more particularly the difficulties likely to beset the young judge-advocate. The school is under obligations to these officers, who kindly volunteered their services and devoted much time to the preparation and delivery of these instructive lectures.

The school was fortunate in having during the year so many commissioned officers under instruction, as it was thereby enabled to obtain the best possible results both in theoretical and practical work. The best interests of the school require that a sufficient number of officers should be in attendance to conduct properly the varied exercises that are necessary to illustrate the studies of the course. In order that this may be done satisfactorily the commissioned officers' class should be as large as

the exigencies of the service will permit. Considering the necessities of the case, it is strongly recommended that at least four officers be assigned to every class, and in event of there not being a sufficient number of graduated cadets appointed to the Corps in any one year to make up a class of that strength, that the deficiency be met by a detail from among the older officers.

I would submit for your favorable consideration the proposition to extend the course of instruction for commissioned officers to one year, eight months of which time to be passed, as now, at the School of Application, one month in the study of ordnance construction at the Washington Navy-Yard, and three months at the Naval War College and Torpedo Station, Newport. This extended course could be pursued with especial advantage, for the reason that habits of study acquired here during eight months of close application would enable the student officer to apply himself without difficulty to the new subjects.

The ordnance shops at the navy-yard, Washington, afford the best opportunity for acquiring a thorough knowledge of the construction of the ordnance and ordnance material in use in the service, and a month spent there would be of incalculable value to our officers whose duties require of them a comprehensive knowledge of ordnance in its various types. So, too, the War College and Torpedo Station, by means of their lectures and practical work, offer the student officer advantages for fitting himself for the routine of the service that should be availed of as early in his career as may be possible. A year so passed would be productive of excellent results to the officers concerned, to the Corps, and to the service at large.

The course at the Infantry and Cavalry School, Fort Leavenworth, and at the Artillery School, Fortress Monroe, is two years, and this period is not thought too long, considering the end in view and results accomplished.

I would respectfully submit for your consideration another matter that bears an important relation to the school and its usefulness. I refer to the limited time within which the diploma of graduation is helpful to an officer coming up for examination.

Under present regulations diplomas dated not more than three years anterior to examination are accepted as sufficient evidence of proficiency in subjects enumerated therein. I would recommend that this limit be extended to five years, as is now the case in the Army in relation to the diplomas conferred by the special schools at Leavenworth and Fortress Monroe.

The term was brought to a close on May 14, after an exhaustive written examination of the members of both divisions. The board of visitors, consisting of Maj. George C. Reid, United States Marine Corps, and Capt. Constantine Chase, United States Army, examined the drawings and papers of the classes and witnessed the practical exercises. They expressed in very complimentary terms their approbation of the school and of the work done by the students.

The programme of studies pursued during the term and the order of exercises attending the graduation of the classes are appended, marked, respectively, A and B.

Very respectfully,

PAUL ST. C. MURPHY,
Captain United States Marine Corps, Commanding.

COLONEL COMMANDANT, UNITED STATES MARINE CORPS,
Headquarters, Washington, D. C.

	Radford's Gunnery Catechism.
	Drill Book for the New Armaments, United States Navy.
Administration and sea service	Accountability Instruction.
	Duties of Marines Embarked.
	United States Navy Regulations.
	United States Army Regulations.
	Recruiting Pamphlet.
Law	Winthrop's Military Law and Courts-Martial.
	United States Navy Regulations.
	Administration of Law and Justice, United States Navy.
Torpedoes	Sleeman's Torpedoes and Torpedo Warfare.
	Notes on Submarine Mining.
	Spar Torpedo Instruction, United States Navy.
	Catechism of Explosives, United States Navy.
Engineering	Hutchison's Field Engineering.
	Richard's Military Topography.
	Signaling and Telegraphy.
	Hygiene (lectures).
Military art	Shaw's Modern Tactics.
	Hamley's Operations of War.
	Troops in Campaign.

ENLISTED MEN'S DIVISION.

Infantry	Instructions for Infantry, United States Navy.
	Manual of Guard Duty.
	Blunt's Small-arms Firing Regulations.
	Batchelor's Infantry Fire in Battle.
	Springfield Rifle Pamphlet.
Artillery	Instructions for Artillery, United States Navy.
	Instructions for Light Artillery, United States Army.
	Instructions for Gatling Gun Drill.
	Radford's Handbook of Naval Gunnery.
Administration and sea service	Accountability Instruction.
	Duties of Marines Embarked.
	Recruiting Pamphlet.
Torpedoes	Notes on Submarine Mining.
	Spar Torpedo Instructions, United States Navy.
	Catechism of Explosives, United States Navy.
Field engineering	Notes on Elementary Field Engineering.
	Signaling and Telegraphy.
Field service	Notes on Minor Tactics.

Field engineering.

The construction of defenses, consisting of shelter trenches, gun pit, covering pit, and rifle trench.

Signals.

Transmission and receipt of messages from various points.

Torpedoes.

The manner of filling, fitting, fusing, and firing contact torpedoes, igniting and burning of gun-cotton primers, preparing service torpedo, and of exploding gun-cotton primer.

Artillery.

Inspection of battery and battery drill.

Minor tactics.

Estimating distances, scouting and outpost service, attack of position, repulse and retreat, attack formation, and capture of position.

Ceremonies.

Review; dress parade.

WASHINGTON, D. C., *September 1, 1895.*

COLONEL: We, the undersigned, constituting at your desire and request the board of visitors at the closing exercises of 1895 of the School of Application, United States Marine Corps, have the honor to report as follows:

The board met and organized at the Marine Corps headquarters on the 14th of May, 1895, and proceeded to inform itself upon the aim and object of the school, and to carefully inspect and witness the execution of the programme of exercises, which took place on the parade ground at the Marine Barracks, occupying about three hours. (See Appendix A.)

In addition to the foregoing, the board, during an intermission in the exercises, visited the recitation rooms of the school, where were found and inspected the examination papers of the student officers that had been written at the examinations held previously to graduation.

By these the purposes of the school and the attainments of the student officers in that line of thought and study were admirably shown. The papers and drawings plainly announced the former to be a post-graduate course of professional inquiry and study in the direct line of duty and thought desirable for and devolving upon an officer of marines; thus creating a professional atmosphere characteristic of the Marine Corps, supplementing the cadet work of its officer recruits while at the Naval Academy, and essentially ending in and maintaining a high tone and "esprit de corps"—qualities that have ever been recognized and sought as being indispensable in binding together and unifying the efforts of men in the attainment of any determined object.

To this the board may properly add, in passing, that, from the observation of some of its members at least, the objects sought in the existence of the Marine Corps are peculiar, useful, and important, and seem too often to be misunderstood and unappreciated by those who should be its friends and supporters.

The board considers it unnecessary to say much more of the performance of the practical exercises shown in the programme than that they were executed in a prompt, military, and highly creditable manner, essentially exhibiting familiarity on the part of the student officers with the objects to be attained by each class of exercise, as well as confidence in their ability to command in that part of the business of war with which they are likely to have experience.

Of course, further practice in such exercises will always confront officers and men throughout their career in service, because thorough practical efficiency is only earned and maintained by eternal drill; but the board means to say that the school has done all that its machinery can to honestly point the class of 1895 in the right direction in this regard, and that perfection must arise from future personal spirit and effort.

In the theoretical branch of the school, the board desires to commend the curriculum as being peculiarly fitted for the objects in view in the school organization (see Appendix B), and while the examination papers in various instances were

admirable, their chief merit, in the eyes of the board, was the clear demonstration made by them of a painstaking, thorough method evidently followed by the corps of instructors in imparting information.

There are seven subdivisions of the course of instruction at this school, all of which are of equal importance professionally to the officer of marines, and each subdivision seems to have been faithfully traversed in so far as the allotted time has permitted. The best work was noticeable under the departments of engineering, torpedoes, military art, and administration, and the board wishes to mention that which was done in topography and cartography as particularly commendable. Skill in such acquirements is always in demand in warfare and can not be too strongly insisted upon in our officers, whatever the arm of military service. The power and facility of making a good reconnaissance is quite indispensable to officers in these days when operations on shore have become an important factor in naval efficiency, and where success depends so much and vitally upon good knowledge and occupation of the ground. Therefore, the advantages to be reaped by a careful development of this branch at the school will doubtless be self-evident.

It seems superfluous to comment further, for it is understood by the board that this School of Application in its present form and scope has been in existence but a few years; consequently difficulties arising mainly from lack of means of instruction have been met and surmounted by those who have been charged with the duty of conducting it. But obstacles are ever present in any undertaking and must be expected. No complaint was brought to the attention of the board, however, and it would therefore be unfair to mention obstacles here were it not that the spirit of patient and earnest devotion to duty manifested by officers and men of the school is emphasized by doing so.

It is this spirit which means progress and eventually high recognition for the school, even as it has achieved its present success. It is this spirit which the board respectfully draws attention to, and with the best wishes and intentions it cordially applauds.

Very respectfully, your obedient servants,

GEO. C. REID,
Major, Adjutant and Inspector, United States Marine Corps.

CONSTANTINE CHASE,
Captain, Fourth Artillery, United States Army.

Colonel Commandant CHARLES HEYWOOD,
United States Marine Corps.

APPENDIX A.

Programme of exercises.

SCHOOL OF APPLICATION, HEADQUARTERS MARINE CORPS,
May 14, 1895.

THEORETICAL, 9.30 a. m.

Examination of classes, class papers, maps, etc., in section rooms.

PRACTICAL.

Assembly immediately after completion of theoretical examination.

School of the company, close-order movements.—First company: Captain, Lieutenant Low; first lieutenant, Lieutenant Dawson; second lieutenant, Lieutenant Davis. Second company: Captain, Lieutenant Borden; first lieutenant, Lieutenant Russell; second lieutenant, Lieutenant Macklin.

School of the company, manual, bayonet exercise, extended order and street-riot drill.—First company: Captain, Lieutenant Dawson; first lieutenant, Lieutenant Davis; second lieutenant, Lieutenant Russell. Second company: Captain, Lieutenant Macklin; first lieutenant, Lieutenant Borden; second lieutenant, Lieutenant Low.

School of the battalion, close-order movements.—Lieutenant Dawson, chief of the battalion; Lieutenant Russell, adjutant. Captain first company, Lieutenant Low; second company, Lieutenant Davis; third company, Lieutenant Macklin; fourth company, Lieutenant Borden.

Battalion, street-riot formation.—Lieutenant Macklin, commanding; Lieutenant Davis, adjutant. Captains, Lieutenant Dawson, Lieutenant Borden; first lieutenants, Lieutenant Low, Lieutenant Russell.

Scouting and outpost service.—Lieutenant Low, commanding.

Battle formation of battalion, attack, and capture of position.—Lieutenant Dawson, commanding; Lieutenant Low, adjutant. Captains, Lieutenant Russell, Lieutenant Macklin; first lieutenants, Lieutenant Borden, Lieutenant Myers.

Defense.—Lieutenant Davis, commanding.

Field engineering.—To explain construction of hasty defenses consisting of shelter trenches, gun pits, covering pits, and rifle trenches: Class.

Construction of shelter trench.—Company under Lieutenant Low; working detachment under Sergeant Glockman and Corporal Lyons.

Estimating distances.—Lieutenant Davis, commanding detachment.

Signaling.—Lieutenant Russell, commanding officers' division; Lieutenant Borden, commanding enlisted men's division.

Torpedoes.—Explain manner of filling, fitting, fusing, and firing contact torpedoes, ignite and burn g. c. primer: Lieutenants Low and Borden, and noncommissioned officers.

Explain service torpedo and explode g. c. primer.—Lieutenant Dawson, commanding detachment.

CEREMONIES.

Artillery, inspection of battery.—Lieutenant Borden, reviewing officer; Lieutenant Russell, commanding; Lieutenant Macklin, chief of first platoon; Lieutenant Davis, chief of second platoon.

Review and inspection.—Lieutenant Dawson, reviewing officer; Lieutenant Russell, commanding; Lieutenant Borden, adjutant. Captains: First company, Lieutenant Low; second company, Lieutenant Davis; third company, Lieutenant Macklin; fourth company, Lieutenant Myers.

Parade.—Lieutenant Macklin, commanding; Lieutenant Russell, adjutant. Captains: First company, Lieutenant Dawson; second company, Lieutenant Low; third company, Lieutenant Davis; fourth company, Lieutenant Borden.

APPENDIX B.

HEADQUARTERS SCHOOL OF APPLICATION, UNITED STATES MARINE CORPS,
Washington, D. C., ——— ——, *189–.*

Programme of instruction, School of Application, United States Marine Corps.

The school has two divisions—one for commissioned officers and one for enlisted men.

DIVISION FOR COMMISSIONED OFFICERS.

For the purpose of administration and convenience in instruction the course is arranged into departments, as follows:

I. Department of infantry.
II. Department of artillery.
III. Department of administration and sea service.
IV. Department of law.
V. Department of torpedoes.
VI. Department of engineering.
VII. Department of military art.

The course in each department is both practical and theoretical, preference being given to the former whenever it is possible to do so.

The class of student officers report for instruction and duty on September 1 of each year. The instruction then commences in the

DEPARTMENT OF INFANTRY.

The course of infantry is divided into four parts, and consists of recitations, drills, problems, and field exercises.

Part I: Infantry drill instructions.
Part II: Guard duty.
Part III: Small-arms firing regulations.
Part IV: Infantry-fire discipline.

DEPARTMENT OF ARTILLERY.

The course of artillery is divided into two parts, and consists of recitations, drills, and practical exercises:

Part I: Artillery drill instructions.

DEPARTMENT OF ADMINISTRATION AND SEA SERVICE.

The course in administration and sea service is divided into two parts, military administration and sea service, and consists of lessons and exercises in application:

Part I: Military administration.
Part II: Sea service.

DEPARTMENT OF LAW.

The course of law is divided into three parts, and consists of lessons supplemented by lectures:

Part I: Military law and courts-martial.
Part II: United States Navy Regulations.
Part III: United States Army Regulations.

DEPARTMENT OF TORPEDOES.

The course of torpedoes is divided into four parts, and consists of lessons and exercises of application:

Part I: Torpedoes, offensive and defensive.
Part II: Torpedo fuses.
Part III: Electricity.
Part IV: Explosives.

DEPARTMENT OF ENGINEERING.

The course of engineering is divided into four parts, and consists of lessons, lectures, and exercises in application:

Part I: Topography.
Part II: Field engineering.
Part III: Signaling and telegraphing.
Part IV: Military hygiene.

DEPARTMENT OF MILITARY ART.

The course of military art is divided into three parts, and consists of lessons and exercises in application:

Part I: Minor tactics.
Part II: Grand tactics.
Part III: Strategy.

DIVISION FOR ENLISTED MEN.

Noncommissioned officers and such privates as show sufficient aptitude are taught the theory and principles of the subjects outlined in the programme for their division, but the main object is to give them a thorough practical knowledge of these subjects.

All enlisted men are required to attend the course of practical exercises at the school. Attendance upon the course of studies in the division for enlisted men is compulsory only on the part of all noncommissioned officers.

The course of studies and of practical exercises for enlisted men proceeds with that of the commissioned officers.

The course for noncommissioned officers is arranged into departments, as follows:

Infantry.
Artillery.
Administration and sea service.
Torpedoes.
Field engineering.
Signaling.
Field service.

The method of instruction is essentially the same as for the commissioned officers' division, and consists of recitations, lectures, drills, and field exercises.

HEADQUARTERS U. S. MARINE CORPS,
Washington, D. C., September 3, 1895.

SIR: In accordance with the Department's instructions of July 10, 1895, I have the honor to submit for your approval the annual estimates for the support of the United States Marine Corps for the fiscal year ending June 30, 1897.

I have had included in those of the quartermaster an item of $40,000 for the erection of suitable barracks for the marines stationed at the navy-yard, League

Island, Pa. The present barracks is a temporary structure, erected by piecemeal, and upon a site totally unsuitable for a permanent building by reason of the marshy ground upon which it stands. It is only 2 feet 10 inches above the flood line of the back channel, which is immediately in its rear, and some of the outbuildings, which were below high-tide level, were swept away a year or two ago. It is inadequate in size for the number of men which should be stationed there, and as it would be a waste of money to add to its size, in view of the age and condition of the building, the Department's approval of this estimate for the erection of a suitable and permanent barracks at this station is requested.

Gradual deterioration and the impossibility of making suitable repairs out of the small sum annually appropriated for "repair of barracks" makes it necessary to expend about $4,000 on needed work at the marine barracks, Mare Island, Cal., and I have had that sum included in these estimates. Six thousand dollars was inserted in last year's estimates for this purpose, and received the approval of the Department and the House of Representatives, but was stricken out in the Senate. Absolutely necessary work already done there out of the regular appropriation has reduced the sum required now to $4,000.

The sum of $2,500 is again included for the erection of officers' quarters at Sitka, Alaska, and I hope will be again approved by the Department, the necessity therefor having been shown in previous years, and is reiterated by the quartermaster in the letter accompanying his estimates.

It is also necessary to erect quarters for the officer in command of marines at the naval station, Newport, R. I., who is now, like the officer at Sitka, occupying a space taken from the barracks of the enlisted men. As this is a permanent station of the corps, proper quarters should be provided for the officers, that they may not be obliged to live in the same building with the enlisted men, to the detriment of their personal comfort and the curtailment of space intended for the use of the men.

Attention is invited in this connection to the following extract from a report of survey held on these quarters under date of July 16, 1895: "We have carefully examined that portion of the marine barracks at this station used for officers' quarters and find them badly arranged for occupancy. We find the bathroom, servants' room, and kitchen all opening into the dining room. There is no accommodation for servants, and all the occupants are obliged to use the bathroom in common. We find the entrance to the quarters opening directly into one of the chambers now used as a parlor." I have accordingly directed an estimate to be made of $6,000 for this purpose, and trust it may receive approval.

An estimate of $2,500 is also inserted for building quarters for the officer in command of marines at the naval station, Port Royal, S. C. He is at present drawing commutation and should be provided with quarters near his men. All the officers of the Navy at this station live in Government houses, some of which were erected quite recently, and the marine officer is now the only one at the station unprovided for.

The naval prison at the navy-yard, Boston, Mass., which is attached to the marine barracks there, renders it necessary to keep a considerable force of men on duty, and the present barracks building has been found inadequate for the purpose by reason of lack of space. But it is thought if it is raised an additional story proper facilities for quartering the men without "double bunking" them will be obtained, and $2,500 is estimated for this work.

The paymaster's estimates show little change over those for last year, and the necessity for his several items is explained in his accompanying letter, which meets with my approval.

The small increase of $177.60 in his estimates for the civil force is asked, that the pay of the chief clerks in mine and the quartermaster's and adjutant and inspector's offices may be placed on an equality with the paymaster's chief clerk. It is only an increase of $59.20 a year for each man, and their positions and the fact that they are each only receiving $44.26 a year more than the second clerks in the offices entitle them to this consideration and I hope the Department will sanction the estimate.

By my direction the paymaster has placed a proviso in connection with the item of mileage for the payment of the same mileage to officers of the Marine Corps traveling under orders without troops as is received by officers of the Navy, as experience has demonstrated the fact that under the present system of payment, in accordance with army law, a larger sum is expended in each case of an officer traveling in this manner than was formerly the case when he received 8 cents per mile, the navy allowance.

Now he receives 4 cents per mile in addition to the actual cost of transportation, and has his extra baggage, when changing stations, transported at the expense of the Government, which has been computed in several recent cases and found to exceed the amount paid under the old system of 8 cents per mile, which was a total reimbursement for all expenses incurred by the officer.

As officers of the Marine Corps travel almost exclusively on business connected with the Navy, and perform duty side by side with navy officers, it would seem

proper that they should receive the same sums for mileage, which is not considered in the nature of an allowance, but as an indemnity for reimbursing an officer for money expended by him while in the performance of Government duty.

The paymaster's and quartermaster's letters inclosing and explaining their estimates are inclosed, and attention is invited to the fact that the former's figures in the aggregate are the same as the ones submitted for the present fiscal year, the increases exactly balancing the reductions.

Very respectfully, your obedient servant,

CHARLES HEYWOOD,
Colonel Commandant.

The SECRETARY OF THE NAVY,
Washington, D. C.

HEADQUARTERS U. S. MARINE CORPS,
PAYMASTER'S OFFICE,
Washington, D. C., August 20, 1895.

SIR: I respectfully submit herewith estimates for the pay of the United States Marine Corps for the fiscal year ending June 30, 1897. These estimates aggregate the same amount as for the current fiscal year. The changes that have been made in the several items are as follows, viz:

An increase of $1,540 has been made in the amount for pay of officers on the active list, made necessary on account of the appointment of one additional second lieutenant.

The amount required for pay of officers on the retired list is reduced by $9,337.50 owing to the decease of two officers.

The pay of civil force has been increased in the sum of $177.60.

The pay of civil force has been decreased in the sum of $1.75, being one day's pay of messenger in the office of the assistant quartermaster, Philadelphia, Pa.

The pay of non-commissioned officers, musicians, and privates has been increased by $7,621.65, this sum being required in consequence of a change in the law relative to retained pay.

The difference between the amount estimated for the fiscal year ending June 30, 1897, and the amount appropriated for the current fiscal year is as follows, viz:

Officers, active, increase	$1,540.00
Non-commissioned officers, musicians, and privates, increase	7,621.65
Undrawn clothing, increase	1,000.00
Mileage, increase	1,000.00
Commutation of quarters, increase	550.00
Civil force, increase	175.85
Total	11,887.50
Officers, retired, decrease	6,712.50
Net increase of estimates now submitted over amount appropriated for current fiscal year	5,175.00

Very respectfully,

GREEN CLAY GOODLOE,
Major and Paymaster, U. S. M. C.

The COLONEL COMMANDANT U. S. MARINE CORPS,
Headquarters, Washington, D. C.

HEADQUARTERS U. S. MARINE CORPS,
QUARTERMASTER'S OFFICE,
Washington, D. C., August 31, 1895.

SIR: I inclose estimates for the support of the Quartermaster's Department, United States Marine Corps, for the fiscal year ending June 30, 1897. The amount required exceeds that appropriated for the same objects for the fiscal year 1896 $58,500, explained as follows, viz:

Provisions, same; clothing, same; fuel, same; forage, increase, $500; transportation and recruiting, same; military stores, same; repair of barracks, increase, $55,500; hire of quarters, same; contingent, increase, $2,500.

Amount appropriated fiscal year 1896	$269,221
Amount estimated for fiscal year 1897	327,721

These estimates have been predicated upon the cost of supplies obtained under existing contracts for the present fiscal year (1896) in all cases where contracts exist.

The Marine Corps possesses public buildings situated at thirteen different naval stations, aggregating a cost of about $650,000, and without occasional special appropriations for one or more of these posts the $10,000 annually appropriated is not sufficient to keep them in repair.

I have included $2,500 in the estimate with which to add an additional story to the Boston barracks. By reference to my inspection report made to you under date of July 10, 1895, you will find the following language in regard to this item, i. e.: "The increased number of enlisted men at this post, caused by the establishment of a naval prison in the navy-yard, renders it necessary to raise the main building an additional story. This can not be done under existing appropriations."

The sum of $2,500 is asked with which to erect suitable quarters for the officer commanding marines at Sitka, Alaska. The marine barracks at that place was erected in 1891, at a cost of $6,000. It is a small frame structure, divided into two dormitories, a mess room, kitchen, clothing room, and wash room. The difficulty of obtaining suitable quarters for the use of the commanding marine officer near his command made it necessary to set apart a portion of the barracks for his temporary use. This has resulted in curtailing the space intended for the enlisted men, besides placing the commanding officer and enlisted men in relation, as to quarters, contrary to all military ideas. The space occupied by the commanding officer is needed for the comfort of the enlisted men.

Six thousand dollars has been included in these estimates for quarters for the commanding officer at Newport, R. I., mainly for the same reason as obtains at Sitka.

The sum of $4,000 is asked for in connection with the barracks and grounds at the navy-yard, Mare Island, Cal. My report made to you under date of May 8, 1895, deals specifically with this matter, and to it your attention is particularly invited.

Forty thousand dollars is asked for a permanent barracks at the navy-yard, League Island, Pa. The building now used as a barracks is a temporary frame structure, one-story high, 120 feet long, and 25 feet wide, with two Ls, each 30 feet long and 25 feet wide. It is situated at the entrance of the yard (Broad street) and stands upon a piece of swampy ground 4 feet below the level of the balance of the yard. On the north and south sides of the barracks is a channel of sluggish water. The ground has a frontage on the main street (Broad) of about 250 feet and terminates at a point. The letter V gives a good idea of the shape of the plat. Twice the water from the sea channel has overflown the grounds, nearly sweeping the buildings off their foundations. The building was erected as a temporary affair—a sort of resting place for the marines—immediately after it was decided to sell the *Antietam*, aboard of which the marines had been quartered ever since the occupation of League Island as a navy-yard, and cost about $3,500. It has fulfilled its mission, and if marines are to remain at that yard, their health and comfort demand more suitable quarters. The building has deteriorated to such an extent that it would be a waste of money to spend the several thousand dollars upon it that will be necessary if we are to continue its use much longer. A suitable site upon which to erect a permanent barracks was selected and set apart by a board of naval officers several years ago, attached to which is ample solid and good ground for parade and drill purposes.

For the last four years the sum of $30,000 has annually been appropriated under the head of "Contingent," and within the same period of time three additional posts have been established. This has resulted in an annual increased expense under this head, followed by an annual deficiency. When it is considered that gas, water, oil, electric lights, and straw for our thirteen posts consumed annually about $15,000 of the $30,000 appropriated, it can readily be perceived that the balance is not sufficient to meet the numerous demands upon it. I therefore have increased the sum from $30,000 to $32,500.

The general condition of our barracks, officers' quarters, and other public buildings at the stations I have found, by a personal inspection, to be excellent, and reflect great credit upon the different commanding officers, giving evidence, as they do, of great care in their preservation and a judicious expenditure of all public funds allotted to them for repair and alteration.

Very respectfully,

H. B. LOWRY,
Major and Quartermaster, U. S. M. C.

The COLONEL COMMANDANT U. S. MARINE CORPS,
Headquarters.

HEADQUARTERS U. S. MARINE CORPS,
Washington, D. C., October 11, 1896.

SIR: In accordance with the Department's instructions of the 8th instant, I have the honor to inclose herewith new sheets of the estimates of appropriations required for the support of the United States Marine Corps for the fiscal year ending June 30, 1897, revised as directed therein.

Very respectfully, your obedient servant,

CHARLES HEYWOOD,
Colonel, Commandant.

The SECRETARY OF THE NAVY,
Washington, D. C.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the paymaster of the United States Marine Corps.

Detailed objects of expenditure, and explanations.		Estimated amount which will be required for each detailed object of expenditure.
PAY OF MARINE CORPS.		
Pay of officers on the active list: 1 colonel commandant, 1 colonel, 2 lieutenant-colonels, 1 paymaster 1 quartermaster, 1 adjutant and inspector, 4 majors, 2 assistant quartermasters, 20 captains, 30 first lieutenants, and 13 second lieutenants		$180,860.00
Pay of officers on the retired list: 2 colonels, 2 lieutenant-colonels, 1 quartermaster, 1 adjutant and inspector, 12 captains, 2 first lieutenants, and 3 second lieutenants	(R. S., p. 272, secs. 1596, 1623; acts June 30, 1834, vol. 4, p. 713, secs. 4, 5; Mar. 2, 1847, vol. 9, p. 155, sec. 3; Aug. 5, 1854, vol. 10, p. 586, sec. 1; Feb. 21, 1857, vol. 11, p. 163, sec. 1; July 17, 1862, vol. 12, p. 594, sec. 2; June 30, 1864, vol. 13, p. 144, sec. 1; Mar. 3, 1865, vol. 13, p. 487, sec. 1; July 28, 1866, vol. 14, p. 334, sec. 13; Mar. 2, 1867, vol. 14, p. 422, sec. 1; Mar. 2, 1867, vol. 14, p. 517, sec. 7; July 15, 1870, vol. 16, p. 330, sec. 3; Jan. 30, 1885, vol. 23, pp. 293, 294, sec. 1; Feb. 14, 1885, vol. 23, p. 305, sec. 1; Navy Regulations, July 18, 1816; Feb. 27, 1893, vol. 27, p. 478, sec. 1; July 26, 1894, vol. 28, pp. 137, 138, (sec. 1).	48,127.50
Pay of noncommissioned officers, musicians, and privates: 1 sergeant-major, 1 quartermaster-sergeant, 1 leader of the band, 1 drum-major, 50 first sergeants, 140 sergeants, 180 corporals, 30 musicians, 96 drummers and fifers, and 1,600 privates, and for the expenses of clerks of the United States Marine Corps traveling under orders		381,847.67
Pay and allowances of retired enlisted men: 1 sergeant-major, 2 drum-majors, 4 first-class musicians, 10 first sergeants, 18 sergeants, 3 corporals, 1 drummer, 2 fifers, and 42 privates, and for those who may be retired during the year		27,000.00
Undrawn clothing: Payment of discharged soldiers for clothing undrawn		23,000.00
Mileage: Mileage to officers traveling under orders without troops		8,000.00
Commutation of quarters to officers on duty without troops where there are no public quarters		4,000.00
PAY OF CIVIL FORCE.		
In the office of the colonel commandant: 1 chief clerk		1,540.80
1 messenger, at $80.94 per month		971.28
In the office of the paymaster: 1 chief clerk		1,600.00
1 clerk		1,496.52
1 clerk		1,257.12
In the office of the quartermaster: 1 chief clerk		1,540.80
1 clerk		1,496.52
1 clerk		1,257.12
In the office of the adjutant and inspector: 1 chief clerk		1,540.80
1 clerk		1,496.52
In the office of the assistant quartermaster, Washington, D.C.: 1 clerk		1,400.00
In the office of the assistant quartermaster, Philadelphia, Pa.: 1 clerk		1,400.00
1 messenger, at $1.75 per diem		638.75
Total pay of civil force		17,636.23
Total amount to be appropriated under each head of appropriation		690,471.40
Amount appropriated for the current fiscal year ending June 30, 1896		695,645.65

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the quartermaster's department, United States Marine Corps.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
Provisions:			
For 2,100 noncommissioned officers, musicians, and privates, and for commutation of rations to 11 enlisted men detailed as clerks and messengers: also for payment of board and lodging of recruiting parties, said payment for board not to exceed $2,500; and no law shall be construed to entitle enlisted marines on shore duty to any rations or commutation therefor other than such as now are or may hereafter be allowed to enlisted men in the Army	.....	$90,000.00	$90,000.00
Clothing:			
For 2,100 noncommissioned officers, musicians, and privates	.....	80,000.00	80,000.00
Fuel:			
For heating barracks and quarters, for ranges and stoves for cooking, fuel for enlisted men, for sales to officers, maintaining electric lights, and for hot-air closets	.....	19,500.00	19,500.00
Military stores:			
For pay of chief armorer at $3 per day, 3 mechanics at $2.50 each per day	$3,297.00		
For purchase of military equipment, such as cartridge boxes, bayonet scabbards, haversacks, blanket bags, knapsacks, canteens, musket slings, swords, drums, trumpets, flags, waist belts, waist plates, cartridge belts, sashes for officers of the day, spare parts for repairing muskets, purchase of ammunition, purchase and repair of instruments for band, purchase of music and musical accessories, medals for excellence in gunnery and rifle practice, good-conduct badges, incidental expenses in connection with the School of Application, signal equipment and stores, binocular glasses, for the establishment and maintenance of targets and ranges, for hiring established ranges, and for procuring, preserving, and handling ammunition, in all	10,000.00	13,297.00	13,297.00
Transportation and recruiting:			
For transportation of troops, including ferriage, and the expense of the recruiting service	.....	15,000.00	15,000.00
Repair of barracks:			
At Portsmouth, N. H.; Boston, Mass.; Newport, R. I.; Brooklyn, N. Y.; League Island, Pa.; Annapolis, Md.; headquarters and navy-yard, Washington, D. C.; Norfolk, Va.; Pensacola, Fla.; Mare Island, Cal.; Port Royal, S. C., and Sitka, Alaska, and per diem for enlisted men employed under the direction of the quartermaster's department on the repair of barracks and other public buildings	.....	10,000.00	
For rent of building used for the manufacture of clothing, storing supplies, and office of the Assistant Quartermaster, Philadelphia, Pa	.....	2,000	12,000.00
Forage:			
For forage in kind for 5 horses of the quartermaster's department and the authorized number of officers' horses	.....	2,800.00	2,800.00
Hire of quarters:			
For hire of quarters for officers serving with troops where there are no public quarters belonging to the Government, and where there are not sufficient quarters possessed by the United States to accommodate them	4,500.00		
For hire of quarters for 7 enlisted men employed as clerks and messengers in commandant's, adjutant and inspector's, paymaster's, and quartermaster's offices, Washington, D. C., and assistant quartermaster's offices at Philadelphia, Pa., at $21 each per month	1,764.00		
For hire of quarters for 3 enlisted men, employed as above, at $10 each per month	360.00	6,624.00	6,624.00

Estimates of appropriations required for the service of the fiscal year ending June 30, 1897, by the quartermaster's department, United States Marine Corps—Continued.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1896.
Contingent:			
For freight, tolls, cartage, advertising, washing bedsacks, mattress covers, pillow cases, towels, and sheets, funeral expenses of marines, stationery and other paper, telegraphing, rent of telephones, purchase and repair of typewriters, apprehension of stragglers and deserters, per diem of enlisted men employed on constant labor for a period of not less than ten days, repair of gas and water fixtures, office and barrack furniture, mess utensils for enlisted men, such as bowls, plates, spoons, knives, and forks; packing boxes, wrapping paper, oil cloth, crash, rope, twine, camphor and carbolized paper, carpenter's tools, tools for police purposes, iron safes, purchase and repair of public wagons, purchase and repair of harness, purchase of public horses, purchase and repair of hose, purchase of hand grenades, services of veterinary surgeons, medicines for public horses, repair of fire extinguishers, purchase and repair of carts, wheelbarrows, and lawn mowers, purchase and repair of cooking stoves, ranges, stoves, and furnaces where there are no grates, purchase of ice, towels, and soap for offices, postage stamps for foreign postage, purchase of books, newspapers, and periodicals, improving parade grounds, repair of pumps and wharves, laying drain, gas, and water pipes, water, introducing gas, and for gas, gas oil, introduction and maintenance of electric lights, straw for bedding, mattresses, mattress covers, pillows, wire bunk bottoms for enlisted men at the various posts, furniture for Government houses and repair of same, and for all emergencies and extraordinary expenses arising at home or abroad, but impossible to anticipate or classify	.....	$30,000.00	$30,000.00
Total	.....	269,221.00	269,221.00

HEADQUARTERS MARINE CORPS, QUARTERMASTER'S OFFICE,
Washington, D. C., October 31, 1895.

Schedule of proposals for supplies for the United States Marine Corps, under advertisement inviting proposals dated March 25, 1895.

Name.	Class.	Amount.
J. Loeb	1	$640.00
M. G. Copeland & Co	*4	248.00
Watsontown Boot and Shoe Co	1	9,514.83
W. H. Wiley & Son	*1	440.00
H. T. Kent	*1	21,456.00
R. Levicks, Son & Co	*1	1,272.33
P. J. Hallahan	1	9,289.00
J. Wanamaker	*1, 2, 3, 4	8,500.15
W. H. Horstmann Co	*1, 2, 3, 4	17,158.50
F. H. Smith	1	9,262.50
Manhattan Supply Co	*1, 3, 4	20,022.35
G. F. Roedel	*1	8,302.50
J. H. Tissot, jr	*1, 3, 4	6,789.80
Shoemaker & Busch	*4	779.20
Lynn Bros	*1	600.00
M. M. Michael	*1, 2, 3	6,450.21
W. F. Burnstein	1	2,126.00
Holmes & Co	1	880.00
John Galbraith	*4	567.50
Cavanagh Bros	(*)	11,514.98
B. Y. Pippey & Co	*1, 2	29,369.55
Louis Siebel	*1	332.00
Paul J. Deritt	*4	1,801.35
Edward Eiche	2	1,960.50
Thomas G. Hood	*1, 2, 3, 4	11,708.27
R. Wurlitzer	*2	624.03
Hartford Woven Wire Co	1	124.00
Wm. J. Braker	*1, 2, 3, 4	5,252.50
Paul J. Field	*4	903.18
Charles W. Hayes	*1, 3	9,501.38

* Accepted for part of class.

Schedule of proposals received for supply of rations for the Marine Corps, for the year 1896, under advertisement from the quartermaster's office dated March 25, 1895.

Name of contractor.	Portsmouth, N.H.	Charlestown, Mass.	Brooklyn, N.Y.	Philadelphia, Pa.	Washington, D.C.	Gosport, Va.	Annapolis, Md.	Newport, R.I.	Mare Island, Cal.	Sitka, Alaska.	Port Royal, S.C.
J. T. Parker & Bro						$25.00					
W. E. Campbell											$50.00
T. J. Barlow						17.90					
M. J. Doran		$16.99									
F. Hume	$19.75			$29.25	*$16.99	18.23	*$24.73				*39.00
E. L. Lash						19.99					
J. Megarry									*$17.00		
Public Market Co		*15.00									
A. Koch		28.00	$15.75								
C. S. Hewlett					17.50						
G. Ahrens' Sons			*15.30								
J. C. Ergood & Co	19.23	25.00	28.00	*28.74	18.73	*17.33	25.49	$40.00			39.75
W. H. Belford	19.80	18.83	17.21	29.75				37.00			
C. A. Simonds		15.69									
C. M. Prince	22.00										
H. R. Paul	*19.17	25.00									
E. de Groff										$39.00	
W. G. Jack										42.00	
H. A. Bauer										35.00	
James Brownlie									17.75		
M. L. Kelly										*34.75	
Corcoran & Collins									17.18		

* Accepted.

Schedule of proposals received for supply of wood and coal to the Marine Corps, under advertisement of the quartermaster's office dated March 25, 1895.

Name of bidder.	Wood (per cord).			Coal (per ton).					
	Oak, in stick.	Pine, in stick.	Pine (kindling), sawed and split.	Bituminous.	Red ash (stove).	White ash (egg).	White ash (stove).	White ash (furnace).	White ash (nut).
Marine barracks, Portsmouth, N. H.:									
A. Stevenson	*$5.70	*$4.25							
J. A. & A. W. Walker						$5.25	*$5.25	$5.25	
C. E. Walker & Co	7.00	5.00	$10.00			5.15		5.15	
S. G. French						*4.84	5.40	*4.84	
W. H. Sise						5.89	6.14	5.89	
E. G. Spinney	5.98	4.50	5.50						
Marine barracks, Charlestown, Mass.:									
S. G. French							*5.10		
Marine barracks, Brooklyn, N. Y.:									
S. G. French						*3.60			$4.75
D. S. Wille						3.61			4.31
J. J. Convery	*11.00	*11.00	*13.70			3.95			4.60
H. W. Peacock						3.85			*3.85
Marine barracks, League Island, Pa.:									
S. G. French						4.74	*4.74		4.74
J. J. Convery	18.00	18.00				5.00	5.00		5.00
J. W. Matthewson	*9.00	*8.75				4.74	5.00		4.84
H. W. Peacock						*4.45	4.75		*4.60
Offices and officers' quarters, Philadelphia, Pa.:									
J. J. Convery	13.00		14.00		*$4.73	*4.53			
J. W. Matthewson	*9.00		*12.00		5.10	4.74			
Marine barracks, Annapolis, Md.:									
H. B. Myers		3.70	4.80		*5.40	*4.70	*5.00		
J. S. M. Basil		*3.48	*4.24		5.74	4.74	5.24		
Offices and officers' quarters in Washington and Georgetown, D. C., and within 1 mile of limits of said cities:									
J. Z. Williams	5.25	5.00	6.00		5.75	4.75	*4.95	*4.60	*4.60
V. B. Johnson	*4.48	*4.48	*5.50		*5.60	*4.75	5.00	4.65	4.65
J. J. Convery									
Marine barracks, navy-yard, Washington, D. C.:									
J. Z. Williams	5.00	5.00			5.75	*4.45	*4.70	*4.50	*4.50
V. B. Johnson	*4.48	*4.48			5.50	4.65	4.90	4.55	4.55
J. J. Convery					8.00	8.00	8.00	8.00	8.00
Jones & Sheriff					*5.14	4.62	4.95	4.57	4.75
Marine barracks, Norfolk, Va.:									
S. G. French							5.64	*5.24	
Geo. Taylor							*5.59	5.34	
Nottingham & Wren							5.75	5.50	
H. & J. Parker	*6.00	*5.50					5.60	5.35	
Officers' quarters, Norfolk, Va.:									
S. G. French					*6.44				
Geo. Taylor							*5.50		
Nottingham & Wren							5.75		
H. & J. Parker	*6.00		*7.00				6.00		
Marine barracks, Mare Island, Cal.:									
S. G. French				*$11.44		12.94			
R. J. R. Aden	10.40	10.40		11.90		*12.50			
C. H. Jouett	*9.00	*9.00		12.05					
Port Royal, S. C.:									
J. H. Averill						*5.00			
Newport, R. I.:									
S. G. French							6.64	6.64	
J. T. Regan	9.90	9.90					7.10	7.10	
T. Manchester	*7.20	*7.20					*5.45	*5.45	
Sitka, Alaska:									
W. G. Jack				17.00					
E. de Graff				*15.00					

* Accepted.

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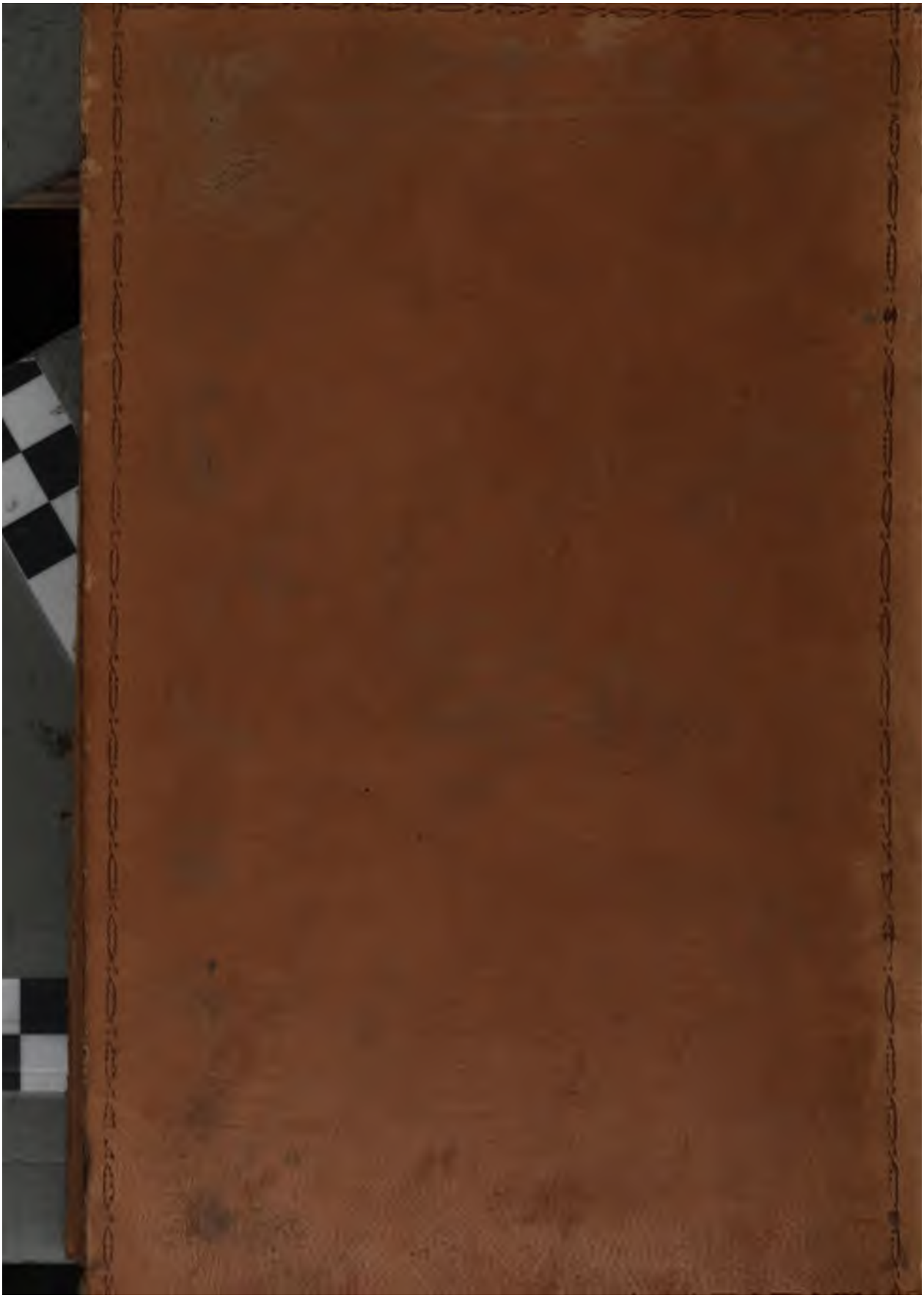
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